REQUEST FOR RESPONSE

**BID NO: 5059**

Department of Public Works Project No: F09-07

**HYLAND PARK FIELD IMPROVEMENTS**
**HYLAND PARK**
**HARTFORD, CONNECTICUT**

DEADLINE: 2:00 P.M., Thursday, May 27, 2010

Carita Rozie
Principal Administrative Analyst
rozic001@hartford.gov
The City of Hartford is soliciting proposals for the Hyland Park Field Improvements Project. This Contract is for renovation of the existing Little League Field including re-orienting the field, new fencing, elevated press area, scoreboard, PA system, dugouts, infield mix, irrigation, under drainage system, soil remediation, new bituminous walkways and ornamental benches and trash receptacles.

Below is an outline of some of the requirements that apply specifically to this project. These requirements are discussed in greater detail in Section 3, General Information.

**BID INFORMATION** (if not attached) is available upon receipt of this invitation over the Internet at [http://www.das.state.ct.us/Purchase/Portal/Portal_Home.asp](http://www.das.state.ct.us/Purchase/Portal/Portal_Home.asp). Drawings associated with this bid, if not included within the bid documents can be viewed at [http://www.merrittgraphics.com/](http://www.merrittgraphics.com/). Click on the PlanWell link, select "Public PlanRoom", then select this project. Hard copies may be purchased from Merritt Graphics. Fees to purchase sets are non-refundable and will be posted on the site.

Additionally, plans may be ordered by calling Merritt Graphics at 800.344.4477 and requesting an order form.

Adobe Acrobat reader may be required to view some of this information. If you do not have this software you may download it for free from Adobe. A link to the Adobe site is provided on the internet bid page.

Businesses without internet access equipment, may contact the Procurement Services Department at 860.757.9610 for any Bid information. Our fax number is 860.722.6607.

**A PRE-BID Conference will be held on Tuesday, May 18, 2010 at 10:30 A.M** at the Hyland Park Little League Field located in the center of Hyland Park, Hartford, CT. The Park may be accessed from New Britain Avenue, Fairfield Avenue and Ansonia Street. All prospective Bidders are requested to meet at the Little League Field. Bidding Contractors are requested to attend this pre-bid conference or make other arrangements to visit the site. Contact Carita Rozie at 860-757-9614 for further information.

Bidders will be required to provide:

- 10% bid bond, cashier's or certified check with your response (see Standard Instructions). NOTE: The City of Hartford is now providing contractors with the option of submitting an electronic Bid Bond through the Surety2000 website.

Surety 2000 is an Internet-based surety processing, verification and security system, developed in cooperation with the surety industry. Contractors and Surety Agents may contact Surety 2000 at: 1-800-660-3263 or by going to www.surety2000.com for more information.
• Performance and Payment bonds for 100% of the project upon award if the contract value exceeds $50,000.00 (see Standard Instructions).

• Copies of current Federal, State and City certifications as applicable.

SPECIAL NOTES:

A. Questions related to this project must be received in writing 72 hours in advance of the response submittal deadline. We strongly recommend that prospective Candidates review specifications early in the solicitation process and submit all questions at one time. Written questions are to be sent to the buyer whose name appears on the invitation via email.

B. A Bidder, as a condition of receiving the award of this contract, will be required to comply with Chapter 2, Article X, (Equal Employment Opportunity) of the Municipal Code and the “Greater Hartford Affirmative Action Plan”.

C. A delinquent tax status will result in disqualifying a Bidder.

D. A Bidder receiving an award will be required to provide proof of Its current standing with the Connecticut Secretary of State’s Office (see Response Section, Bidder’s Qualifications).

E. The DAS Contractor Prequalification Program (Public Act 03-215) requires all contractors to prequalify “before they can bid on any construction, alteration, remodeling, repair or demolition of any public building (does not apply to road construction), for work by the state or a municipality, estimated to cost more than $500,000 and which is funded in whole or in part with state funds. This project is subject to the state prequalification provisions if indicated in the “Construction Contract Summary Sheet” located at the front of this document. Information and application forms related to this program are located on the internet at: http://www.das.state.ct.us/Business_Svs/PreQual/Prequal.asp.

PLAN HOLDERS LISTS are available from Merritt Graphics’ PlanWell site locates at http://www.merrittgraphics.com/. Lists of Bidders having picked up bid documents will not be provided over the phone.

If, after review of the bid documents, your firm is interested in performing the services specified, provide the information and documentation requested, sign and return the complete document, along with your detailed response, to Procurement Services by the due date. We would appreciate the courtesy of promptly advising us if you do not intend to respond. For any questions contact Carita Rozie @ 860.757.9614 or email @ rozic001@hartford.gov.
CONSTRUCTION PROJECT SUMMARY SHEET

<table>
<thead>
<tr>
<th>RFR NUMBER:</th>
<th>BIDNO: 5059</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTRACT NUMBER</td>
<td>F09-07</td>
</tr>
<tr>
<td>BID TITLE:</td>
<td>HYLAND PARK FIELD IMPROVEMENTS</td>
</tr>
</tbody>
</table>

ESTIMATED CONSTRUCTION COST: $400,000

CONTRACT TYPE: (X) OPEN COMPETITIVE WITH W/MBE % GOAL

(   ) SMALL MINORITY BUSINESS ENTERPRISE SET ASIDE

(   ) SMALL CONTRACTOR SET ASIDE

STATE OF CONNECTICUT PREQUALIFICATION REQUIRED: (   ) YES (X) NO

PERCENTAGE OF MBE/WBE PARTICIPATION REQUIRED: 15%

FEDERAL WAGE RATE REQUIREMENTS: (   ) YES (X) NO

STATE WAGE RATE REQUIREMENTS: (X) YES (   ) NO

HARTFORD BASED BIDDER ADVANTAGE: (   ) APPLICABLE (X) NON-APPLICABLE

PLANS AVAILABLE AS PART OF BID DOCUMENTS: (X) YES (   ) NO

SPECIAL INSURANCE REQUIREMENTS: (   ) YES (X) NO

CALENDAR DAYS ALLOWED FOR CONTRACT WORK: WORK MUST BE SUBSTANTIALLY COMPLETE WITHIN 90 CALENDAR DAYS. FIELD TO BE READY AND TURNED OVER FOR OWNER USE ON APRIL 1, 2011.

LIQUIDATED DAMAGES FOR LATE COMPLETION: $1,000 PER DAY

DISCLAIMER: THIS SHEET IS PROVIDED FOR GENERAL INFORMATION ONLY AND IS SOLELY INTENDED TO ASSIST BIDDERS IN UNDERSTANDING THE GENERAL SCOPE OF WORK. BIDDERS MUST REFER TO SPECIFIC CONTRACT SECTIONS FOR DETAILS. IN THE EVENT OF A CONFLICT, THE PROJECT AND CONTRACT SPECIFICATIONS SHALL TAKE PRECEDENCE OVER THIS CONTRACT SUMMARY SHEET.

Invitation To Respond
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>RFR NUMBER:</th>
<th>BIDNO: 5059</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTRACT NUMBER</td>
<td>F09-07</td>
</tr>
<tr>
<td>BID TITLE :</td>
<td>HYLAND PARK FIELD IMPROVEMENTS</td>
</tr>
</tbody>
</table>

## GENERAL INFORMATION

<table>
<thead>
<tr>
<th>Title Page (Front Cover)</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invitation To Respond</td>
<td>2</td>
</tr>
<tr>
<td>Project Summary Sheet</td>
<td>1</td>
</tr>
<tr>
<td>Site Location Map</td>
<td>1</td>
</tr>
<tr>
<td>Table of Contents (this document)</td>
<td>3</td>
</tr>
<tr>
<td>Sample Form of Contract, included in this document by reference is available at: <a href="http://www.hartford.gov/purchasing/Documents.htm">http://www.hartford.gov/purchasing/Documents.htm</a> Document titled: <strong>Sample Form of Agreement_AIA A101</strong></td>
<td></td>
</tr>
<tr>
<td>Sample General and Supplementary Conditions, included in this document by reference is available at: <a href="http://www.hartford.gov/purchasing/Documents.htm">http://www.hartford.gov/purchasing/Documents.htm</a> Document titled: <strong>General Conditions of the Contract_AIA A201</strong></td>
<td></td>
</tr>
<tr>
<td>Sample Performance Bond, included in this document by reference is available at: <a href="http://www.hartford.gov/purchasing/Documents.htm">http://www.hartford.gov/purchasing/Documents.htm</a> Document titled: <strong>Sample Performance Bond_AIA A312</strong></td>
<td></td>
</tr>
</tbody>
</table>

## RESPONSE FORMS

<table>
<thead>
<tr>
<th>1.0 Response Forms</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Response Signature Form</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Response Pricing</td>
<td>1</td>
</tr>
<tr>
<td>1.3 Statement of Qualifications</td>
<td>2</td>
</tr>
<tr>
<td>1.4 Subcontractor Information Forms</td>
<td>6</td>
</tr>
<tr>
<td>1.5 Bidder’s EEO Status and Report</td>
<td>1</td>
</tr>
</tbody>
</table>

## TECHNICAL SPECIFICATIONS

### Technical Specifications

**Division 1 – General Requirements**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>01010</td>
<td>Summary of Work</td>
<td>8</td>
</tr>
<tr>
<td>01020</td>
<td>Allowances</td>
<td>2</td>
</tr>
<tr>
<td>01030</td>
<td>Alternates</td>
<td>2</td>
</tr>
</tbody>
</table>

**Division 2 – Sitework**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>02000</td>
<td>General Requirements</td>
<td>4</td>
</tr>
<tr>
<td>02210</td>
<td>Site Preparation and Demolition</td>
<td>4</td>
</tr>
<tr>
<td>02240</td>
<td>Dewatering and Construction Surface Water</td>
<td>3</td>
</tr>
<tr>
<td>02270</td>
<td>Erosion Control</td>
<td>5</td>
</tr>
<tr>
<td>02300</td>
<td>Earthwork</td>
<td>26</td>
</tr>
<tr>
<td>02600</td>
<td>Storm Drainage System</td>
<td>10</td>
</tr>
<tr>
<td>02743</td>
<td>Bituminous Concrete Walkways</td>
<td>9</td>
</tr>
<tr>
<td>02791</td>
<td>Infield Mix</td>
<td>4</td>
</tr>
<tr>
<td>02800</td>
<td>Site Improvements</td>
<td>9</td>
</tr>
<tr>
<td>02810</td>
<td>Site Irrigation System</td>
<td>9</td>
</tr>
<tr>
<td>SHEET NUMBER</td>
<td>TITLE</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>TLS-01</td>
<td>Title Sheet</td>
<td></td>
</tr>
<tr>
<td>GNA-01</td>
<td>Legend, Abbreviations, &amp; General Notes</td>
<td></td>
</tr>
<tr>
<td>MDS-01</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>MDS-02</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>MDS-03</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>MDS-04</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>MDS-05</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>MDS-06</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>MDS-07</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>MDS-08</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>MDS-09</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>MDS-10</td>
<td>Site Details</td>
<td></td>
</tr>
<tr>
<td>DEM-01</td>
<td>Demolition Plan</td>
<td></td>
</tr>
<tr>
<td>PLN-01</td>
<td>Construction Plan</td>
<td></td>
</tr>
<tr>
<td>TIE-01</td>
<td>TIE Plan</td>
<td></td>
</tr>
<tr>
<td>TIE-02</td>
<td>TIE Plan</td>
<td></td>
</tr>
<tr>
<td>GUP-01</td>
<td>Grading and Utility Plan</td>
<td></td>
</tr>
<tr>
<td>SV-1</td>
<td>Topographic Survey</td>
<td></td>
</tr>
</tbody>
</table>

GENERAL INFORMATION FOR PREPARATION OF A RESPONSE

Revision 050809

3.1 How To Respond:
3.2 Transaction Fee
3.3 Bidder’s Tax Status
3.4 Bid Bond
3.5 Prevailing Wages
3.6 Withdrawal Or Modification Of Bid
3.7 Examination Of Site And Documents
3.8 Questions & Addenda
3.9 Oral Statements Not Binding
3.10 Basis For Award
3.11 Criteria For Award
3.12 Evaluation Of Bidders
3.13 Notice Of Award
3.14 Performance Bond And Labor & Material Bond
3.15 Insurance
3.16 Failure To Execute Contract
3.17 Performance Evaluation
3.18 Contract Documents
3.19 Subcontractors
3.20 Equal Employment Opportunity/Affirmative Action
3.21 EEO/Affirmative Action Report
3.22 Compliance With Law
3.23 Governing Law

LABOR COMPLIANCE

<table>
<thead>
<tr>
<th>WAGE RATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAMPLE FORMS - included in this document by reference, are available at <a href="http://www.hartford.gov/purchasing/Documents.htm">http://www.hartford.gov/purchasing/Documents.htm</a> Document titled: <strong>Standard Construction Sample Forms:</strong></td>
</tr>
<tr>
<td>Certificate of Non-segregated Facilities</td>
</tr>
<tr>
<td>Notification of Job Openings During Project</td>
</tr>
<tr>
<td>About Compliance Reports</td>
</tr>
<tr>
<td>Monthly Workforce Utilization Report</td>
</tr>
<tr>
<td>Monthly M/WBE Payment Status Report</td>
</tr>
<tr>
<td>Final M/WBE Payment Status Report</td>
</tr>
</tbody>
</table>
SECTION 1.0
RESPONSE FORMS

Responses are to be delivered to:

Hartford City Hall, Procurement Services,
550 Main Street, Suite 100
Hartford, Ct. 06103.

no later than the deadline date and time. Be sure to indicate the request number, name, and opening time in the spaces provided. Mark the original response package as "ORIGINAL" on the front cover. See Section 3.1 for more information.

Response Check List

(NO: This Check List may not contain every response item for every solicitation. It is the Responder’s responsibility to ensure submittal of all required response information.)

☐ Response Signature form completed (Section 1.1)
☐ Response pricing completed (Section 1.2)
☐ Statement of Qualifications completed (Section 1.3)
☐ Certified by the City as an Equal Employment Opportunity Employer (http://www.hartford.gov/human_relations/ohr2.0/MWBE_Certification.htm)
☐ Current in taxes and other fees owed to the City?
☐ Acknowledged Addenda (Section 1.1)
☐ Satisfy Living Wage requirements for service contracts where local labor pool is used (http://www.hartford.gov/purchasing/Documents.htm)
☐ Bid bond (if required in the Invitation To Respond)
☐ Current with State’s Pre-Qualification Requirements? (http://www.das.state.ct.us/Purchase/redir_Prequal.asp)
☐ Satisfy the Minority Utilization requirement (indicated on the Summary page, usually page 2 of the bid documents) and completed the forms (found at the end of Section 1)
☐ The electronic files, from which you printed your hard copy proposal, are to be emailed to the buyer within one hour AFTER the deadline for submitting hard copy responses. See section 3.1 E

Electronic Bid Bonds

* If a bid bond is required and you choose to submit an electronic bid bond, please be advised that upon signing your bid with the digital signature you are also signing the Bid Bond. All legal obligations associated with the bid bond will be validated upon signing of the bid with the digital signature.
Company Name - 
Address - 
Phone -   Fax -    Email - 
Manager -  Fed ID# 

The undersigned hereby declares that he/she or they are thoroughly familiar with the specifications, the various sites, the City’s requirements, and the objectives for each element of the project item or service and understands that in signing this proposal all right to plead any misunderstanding regarding the same is waived. The undersigned further understands and agrees that he will furnish and provide all the necessary material, machinery, implements, tools, labor, services, and other items of whatever nature, and to do and perform all the work necessary under the aforesaid conditions, to carry out the contract and to accept in full compensation therefore the amount of the contract as agreed to by the Contractor and the City.

The undersigned hereby declares that no reason or persons other than those named herein are interested in this proposal, which is made without any connection with any other person or persons making any proposal for the same work and is in all respects fair and without collusion or fraud; that no person acting for or employed by the City of Hartford is directly or indirectly interested therein, or in the supplies or works to which it relates, or will receive any part of the profit or any commission there from in any manner which is unethical or contrary to the best interest of said City of Hartford.

The undersigned additionally declares that they are not debarred or suspended, or otherwise excluded from, or ineligible for, participation in City of Hartford, State of Connecticut or federally funded projects (Executive Order 12549).

The undersigned certifies under penalty of false statement that the information provided in this response is true.

Delivery / Initiate Services: Calendar days after receipt of contract.

<table>
<thead>
<tr>
<th>Bid Security provided by</th>
<th>For electronic bonds enter bond number otherwise check the appropriate box</th>
<th>Electronic Bond #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>□ Bond (hard copy)</td>
</tr>
</tbody>
</table>

EEO Certification Status (check one)

☐ Current and on file
☐ EEO form attached

DAS Prequalified Contractor? (non highway construction projects >$500,000 see: http://www.das.state.ct.us/)

☐ Certificate attached
☐ Update Statement attached

Insurance Agent Name - Tel. - 
Submitted by -

Printed name and title Date

(Authorized Agent of Company)

The above signatory acknowledges receipt of the following addenda issued during the bidding period and understands that they are a part of the bidding documents (if applicable):

1.2 RESPONSE PRICING

BASE BID and ALTERNATES

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASE BID as shown on the contract drawings and in the specifications including the $25,000 allowance (see section 01020).</td>
<td>$</td>
</tr>
<tr>
<td>Base Bid in words (if submitting a handwritten response)</td>
<td></td>
</tr>
<tr>
<td>Alternate #1 – Add to the Base Contract Sum the cost to provide bituminous walkways, ornamental benches and trash receptacles, bollards, and drinking fountain as detailed on the Construction Drawings.</td>
<td>$</td>
</tr>
<tr>
<td>Alternate #2 – Add to the Base Contract Sum the cost to provide fencing, ramp and press platform as detailed on the Construction Drawings.</td>
<td>$</td>
</tr>
<tr>
<td>Alternate #3 – Add to the Base Contract Sum the cost to provide bituminous walkways, ornamental benches and trash receptacles as detailed on the Construction Drawings.</td>
<td>$</td>
</tr>
<tr>
<td>Alternate #4 – Add to the Base Contract Sum the cost to provide a new scoreboard and sound system as detailed on the Construction Drawings.</td>
<td>$</td>
</tr>
<tr>
<td>Alternate #5 – In lieu of furnishing new off-site topsoil within the 6 foot high chain link fence, installed under the base bid, the Contractor shall utilize the existing topsoil and amend the on-site soils as necessary to meet specifications. The cost for this alternate shall include the removal and disposal of any and all excess and/or unsuitable materials. The lump sum cost for this alternate should reflect the cost to delete the specified new off-site topsoil from the base bid and replace it with amending the existing soil to meet the specifications. Note that this alternate does not apply to the topsoil outside the limits of the 6 foot high chain link fence.</td>
<td>$</td>
</tr>
</tbody>
</table>
1.3 STATEMENT OF QUALIFICATIONS

Please answer the following questions regarding your company's past performance. Attach a financial statement or other supportive documentation. Failure to reply to this instruction may be regarded as justification for rejecting a bid.

1. Number of years in business -              DUNS Number:

2. Number of personnel employed Part time - , Full time - ,

3. List six contracts of this type/size your firm has completed within the last three years:

<table>
<thead>
<tr>
<th>Project</th>
<th>Date</th>
<th>Contact Person</th>
<th>Phone No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. DAS CONTRACTOR PREQUALIFICATION

You certify that there has been no substantial change in your financial position or corporate structure since your most recent prequalification certificate was issued or renewed, other than those changes noted in the update statement (attached).

5. ORGANIZATIONAL STRUCTURE OF BIDDER (check which applies)

☐ general partnership
☐ limited partnership
☐ limited liability corporation
☐ limited liability partnership,
☐ corporation doing business under a trade name
☐ individual doing business under a trade name
☐ other (specify)

6. STATUS OF THE BUSINESS AND ITS CURRENT STANDING WITH THE SECRETARY OF STATE’S OFFICE; e.g., are all required filings current and in good standing or has the entity been withdrawn or canceled

See General Information for Responding paragraph 3.17

Connecticut corporations - Will the Secretary of State be able to issue a Certificate of Good Standing within 30 days of the bid opening? Yes ☐ No ☐

Out-of-State corporations - Do you have a valid license to do business in the State of Connecticut? If a license is not required for the services being provided have you filed with the Connecticut Secretary of State? Yes ☐ No ☐
7. Is your local organization an affiliate of a parent company? If so, Indicate the principal place of business of your company and the name of the agent for service if different from what has been indicated on the response form:

<table>
<thead>
<tr>
<th>Business Name</th>
<th>Address</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
</tr>
</thead>
</table>

**NOTE:** In the case of a Limited Liability Corporation or a Limited Liability Partnership a certified copy of the Articles of Organization certified as valid and in effect as of the date of the bid opening will be required within 30 days of the bid opening.

A listing of the corporate officers, in the case of a corporation; the general or managing partners, in the case of a partnership; or the managers and members in the case of either a limited liability partnership or company will be required within 30 days of the bid opening.

8. Your company may be asked to submit the following information relative to your company's financial statements prior to receiving an award. This information will not be part of the public bidding record and will remain confidential if it is submitted via an email that requests confidentiality or if hand delivered, in a separate sealed envelop marked “Confidential.”

All information should be supported with appropriate audited financials.

a. Book Value (Total Assets - Total Liabilities)
b. Working Capital (Current Assets - Current Liabilities)
c. Current Ratio (Current Assets/Current Liabilities)
d. Debt to Equity Ratio (Long Term Debt/Shareholder's Equity)
e. Return on Assets (Net Income/Total Assets)
f. Return on Equity (Net Income/Shareholder's Equity)
g. Return on Invested Capital (Net Income/Long Term Debt = Shareholders' Equity)

9. **Taxpayer's Identification Number:**

Respondents must provide their Taxpayer Identification Number on the response form (Fed ID#). Award recipients, whether an individual, proprietor, partnership or a non-profit corporation or organization must file the Internal Revenue Service Form W-9, Request for Taxpayer Identification Number and Certification with the City. Copies of this form are available at: [http://www.hartford.gov/purchasing/documents.htm](http://www.hartford.gov/purchasing/documents.htm)

Additional information may be requested subsequent to your responding to this solicitation.

1.4 **SUBCONTRACTOR INFORMATION**

Forms labeled Section 1.4 are provided below to accommodate the Base Bid (or Lump Sum) and alternates (if called for) in this Request for Response (RFR).
The information provided below applies to: (Check one box as appropriate)

<table>
<thead>
<tr>
<th>Base Bid</th>
<th>Alternate 1</th>
<th>Alternate 2</th>
<th>Alternate 3</th>
<th>Alternate 4</th>
<th>Alternate 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>☒</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.4 SUBCONTRACTOR INFORMATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified W/MBE business.

Bidder agrees to subcontract the portion of the work stipulated below to W/MBE businesses. A copy of the contract between the bidder and the subcontractor will be required prior to award of the contract.

Note: The provisions of section 3 and 4 of public act 03-215, Prequalification now applies to subcontractors.

<table>
<thead>
<tr>
<th>Trade or Nature of Work</th>
<th>Business Name and Address</th>
<th>W/MBE</th>
<th>% of Base Bid</th>
<th>Subcontract $ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL SUBCONTRACT VALUE

TOTAL W/MBE SUBCONTRACT VALUE

Subcontract % to total project %

W/MBE Subcontract % to total project %

Additional information may be requested subsequent to your responding to this bid request.
The information provided below applies to:  

(Check one box as appropriate)

<table>
<thead>
<tr>
<th>Base Bid</th>
<th>Alternate 1</th>
<th>Alternate 2</th>
<th>Alternate 3</th>
<th>Alternate 4</th>
<th>Alternate 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.4 SUBCONTRACTOR INFORMATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified W/MBE business.

Bidder agrees to subcontract the portion of the work stipulated below to W/MBE businesses. A copy of the contract between the bidder and the subcontractor will be required prior to award of the contract.

Note: The provisions of section 3 and 4 of public act 03-215, Prequalification now applies to subcontractors.

<table>
<thead>
<tr>
<th>Trade or Nature of Work</th>
<th>Business Name and Address</th>
<th>W/MBE √</th>
<th>% of Base Bid</th>
<th>Subcontract $ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL SUBCONTRACT VALUE

TOTAL W/MBE SUBCONTRACT VALUE

Subcontract % to total project  %

W/MBE Subcontract % to total project  %

Additional information may be requested subsequent to your responding to this bid request.
The information provided below applies to: (Check one box as appropriate)

<table>
<thead>
<tr>
<th>Base Bid</th>
<th>Alternate 1</th>
<th>Alternate 2</th>
<th>Alternate 3</th>
<th>Alternate 4</th>
<th>Alternate 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.4 SUBCONTRACTOR INFORMATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified W/MBE business.

Bidder agrees to subcontract the portion of the work stipulated below to W/MBE businesses. A copy of the contract between the bidder and the subcontractor will be required prior to award of the contract.

**Note:** The provisions of section 3 and 4 of public act 03-215, Prequalification now applies to subcontractors.

<table>
<thead>
<tr>
<th>Trade or Nature of Work</th>
<th>Business Name and Address</th>
<th>W/MBE</th>
<th>% of Base Bid</th>
<th>Subcontract $ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL SUBCONTRACT VALUE**

**TOTAL W/MBE SUBCONTRACT VALUE**

**Subcontract % to total project**  
%  

**W/MBE Subcontract % to total project**  
%  

Additional information may be requested subsequent to your responding to this bid request.
The information provided below applies to: (Check one box as appropriate)

<table>
<thead>
<tr>
<th>Base Bid</th>
<th>Alternate 1</th>
<th>Alternate 2</th>
<th>Alternate 3</th>
<th>Alternate 4</th>
<th>Alternate 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>☒</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.4 SUBCONTRACTOR INFORMATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified W/MBE business.

Bidder agrees to subcontract the portion of the work stipulated below to W/MBE businesses. A copy of the contract between the bidder and the subcontractor will be required prior to award of the contract.

**Note:** The provisions of section 3 and 4 of public act 03-215, Prequalification now applies to subcontractors.

<table>
<thead>
<tr>
<th>Trade or Nature of Work</th>
<th>Business Name and Address</th>
<th>W/MBE</th>
<th>% of Base Bid</th>
<th>Subcontract $ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>☐</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>☐</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL SUBCONTRACT VALUE**

**TOTAL W/MBE SUBCONTRACT VALUE**

**Subcontract % to total project** %

**W/MBE Subcontract % to total project** %

Additional information may be requested subsequent to your responding to this bid request.
The information provided below applies to: (Check one box as appropriate)

<table>
<thead>
<tr>
<th>Base Bid</th>
<th>Alternate 1</th>
<th>Alternate 2</th>
<th>Alternate 3</th>
<th>Alternate 4</th>
<th>Alternate 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.4 SUBCONTRACTOR INFORMATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified W/MBE business.

Bidder agrees to subcontract the portion of the work stipulated below to W/MBE businesses. A copy of the contract between the bidder and the subcontractor will be required prior to award of the contract.

**Note**: The provisions of section 3 and 4 of public act 03-215, Prequalification now applies to subcontractors.

<table>
<thead>
<tr>
<th>Trade or Nature of Work</th>
<th>Business Name and Address</th>
<th>W/MBE</th>
<th>% of Base Bid</th>
<th>Subcontract $ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL SUBCONTRACT VALUE

TOTAL W/MBE SUBCONTRACT VALUE

**Subcontract % to total project** %

**W/MBE Subcontract % to total project** %

Additional information may be requested subsequent to your responding to this bid request.
The information provided below applies to: (Check one box as appropriate)

<table>
<thead>
<tr>
<th>Base Bid</th>
<th>Alternate 1</th>
<th>Alternate 2</th>
<th>Alternate 3</th>
<th>Alternate 4</th>
<th>Alternate 5</th>
</tr>
</thead>
</table>

1.4 SUBCONTRACTOR INFORMATION

If subcontractors are to be used, indicate the firm name, address, portion or section of work the subcontractor will be performing, the subcontract value, percentage of base bid and if the subcontractor is a City certified W/MBE business.

Bidder agrees to subcontract the portion of the work stipulated below to W/MBE businesses. A copy of the contract between the bidder and the subcontractor will be required prior to award of the contract.

Note: The provisions of section 3 and 4 of public act 03-215, Prequalification now applies to subcontractors.

<table>
<thead>
<tr>
<th>Trade or Nature of Work</th>
<th>Business Name and Address</th>
<th>W/MBE</th>
<th>% of Base Bid</th>
<th>Subcontract $ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL SUBCONTRACT VALUE

TOTAL W/MBE SUBCONTRACT VALUE

Subcontract % to total project %

W/MBE Subcontract % to total project %

Additional information may be requested subsequent to your responding to this bid request.
1.5. Bidder's EEO Status and Report
As a condition of doing business with the City the selected respondent must be certified by the City as an Equal Employment Opportunity Employer. Certifications must be renewed annually. If your firm is not currently certified you may obtain the required forms on-line at: http://www.hartford.gov/purchasing/documents.htm and submit completed forms with your response. To check the current status of your EEO certification contact the Office of Human Relations, 860.543.8595, fax 860.722.6486 or email: LRuiz@hartford.gov.

Response Summaries:
Response summaries will be available over the Internet, to those that responded, at http://www.das.state.ct.us/Purchase/Portal/Portal_Home.asp. This summary information will be available anytime after 5:00 PM on the opening date and time. Results will not be provided over the phone.
SPECIAL PROVISIONS AND TECHNICAL SPECIFICATIONS
SECTION 01010
SUMMARY OF WORK

PART 1—GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of Section 02000, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within Section 02000, GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

B. The proposed products (e.g. ornamental bench, trash receptacle, dugout, drinking fountain, etc) called for in these contract documents represent the City’s intended design. The Contractor may submit substitute products from other manufacturers for approval by the engineer. There is no guaranteed approval assumed when submitting for substitution.

C. The proposed irrigation system represented on the construction plans represents a potential irrigation design and is meant for schematic purposes only. The Contractor is responsible for developing a proposed irrigation design which meets the requirements of the provided specification.

1.03 WORK UNDER THIS CONTRACT

A. The General Contractor shall be prime contractor and shall assume all related responsibilities specified herein and shown on the Contract Documents.

B. The work under the contract shall include but not be limited to the following elements. Refer to all sections of the specifications and all Contract Documents for complete understanding of the scope of work.

1. Obtain all necessary permits prior construction.
2. Establish equipment and materials storage areas.
3. Contact and coordinate all work with utility companies.
4. Construct new little league field including fencing, dugouts, underdrains, irrigation, elevated press area, scoreboard, PA system, infield mix, soil remediation.
5. Construct new bituminous concrete pathways, grading, and install ornamental benches, trash receptacles, and drinking fountain.
6. Loam and seed all disturbed areas as work progresses.

1.04 EXAMINATION OF SITE

A. The bidders are expected to examine and to be thoroughly familiar with all Contract Documents and with the conditions under which work will be carried out. The Owner will not be responsible for errors, omissions and/or charges for extra work arising from General Contractor or Subcontractor’s failure to familiarize themselves with the Contract Documents or existing conditions. By submitting a bid, the bidder agrees and warrants that he has had the opportunity to examine the site and the contract documents, that he is familiar with the conditions and requirements of both and where they require, in any part of the work, a given result to be produced, that the contract documents are adequate and that he will produce the required results.

1.05 CONTRACT METHOD

A. Work under this contract shall be one lump sum price, for the scope of work as described in these specifications and shown on the Contract Documents. Add alternates shall be as described in Section 01030, ALTERNATES if included.

1.06 SUMMARY REFERENCE

A. The work can be summarized by reference to requirements of the various contract documents, which in turn make reference to the requirements of other applicable provisions which control or influence the work; and these references can be summarized but not necessarily limited to:

1. Executed Owner-Contractor Agreement bound herewith.
2. General Conditions which are bound herewith.
3. Drawings which are listed on a “List of Drawings” and bound herewith.
4. Specification Sections which are bound herewith.
5. Addenda and Modifications to the Contract Documents which have been either Bound herewith or distributed by transmittal subsequent to the binding hereof.
6. Governing Regulations which have a bearing on the performance of the work; copies can be obtained from or reviewed at the local, State or Federal Agency responsible for the regulation in each case.
7. Submittals, copies of which are retained by the Contractor at the site.
8. Miscellaneous elements of information having a bearing on performance of the work, such as weather forecasts and reports of general trace union negotiations; copies must be obtained by the Contractor through normal channels of information.
1.07 WORK SEQUENCE

A. The General Contractor shall be responsible for scheduling his work activities, and work sequence, to facilitate any simultaneous work of constructing the site. Work shall be fully coordinated to ensure that the contract is completed in a timely manner. Contractor will be responsible to provide monthly project schedules to Owner or Owner’s representative ensuring project completion within the contracted time frame.

B. The Contractor is responsible for reviewing all work that needs to be completed for the project prior to the start of construction. The Contractor shall order all items that have the potential to be long lead items as early as possible in order to avoid impacts to the construction schedule. The Contractor shall be solely responsible for the delay in construction schedule that results from a delay in ordering materials.

1.08 CONTRACTOR USE OF PREMISES / WORK LIMITS

A. The Contractor(s) performing the work for the contract shall coordinate with the owner, or owner’s representative, for the confirmation of storage areas, stockpile areas, and sequence of work. The contractor shall obey all laws within Connecticut. Generally and specifically this includes all work described in this Division 1 Section and all other Sections of this Specification and all other Contract Documents.

1.09 SITE RESTRICTIONS

A. Do not encroach on surrounding areas in any way. Public sidewalks and park walkways must be kept open, operational and free of construction hazards during construction.

B. The Contractor shall not impede the access to any other areas of the park specifically the use of the other athletic fields.

C. Adhere to the provisions of the City of Hartford Noise Ordinance.

D. The contractor shall develop and submit a construction phasing and schedule plan for city approval within 15 days of being awarded the contract. The construction sequencing must satisfy the following terms:

1. The Contractor must ensure that all temporary public access routes are handicap accessible and are maintained as such at all times.

1.10 WAGE RATES

A. State wage rates shall apply to this project.
1.11 COORDINATION AND INTENT

A. The General Contractor shall be responsible for incorporating into his contract bid all necessary work activities, time factors, and cost implications that may occur as a result of coordination activities.

B. It is the intent of the specifications and drawings to call for finished work, ready for use. Except where otherwise stated in these specifications or on the plans, all materials, equipment, and apparatus shall be new and of first-class quality.

C. Any apparatus, material, or work not shown in the Drawings, but mentioned in the specifications, or vice versa, or any incidental accessories, or minor details not shown, but necessary to make the work complete in all respects, even if not particularly specified, shall be provided by the Contractor without additional expense to the Owner.

D. The locations of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and result must be determined at the project and shall have the approval of the Owner’s Representative before being installed. Do not scale drawings.

1.12 FIELD ENGINEERING

A. Provide field engineering services; establish grades, lines and levels, by use of recognized engineering survey practices. Survey layout and control shall be performed by a Connecticut Licensed Land Surveyor or Engineer.

1.13 LAWS, ORDINANCES, PERMITS AND FEES

A. The Contractor shall give all necessary notices, obtain all permits, file all necessary plans, prepare all documents and obtain all required Certificates of Inspection for his work and deliver same to Owner’s Representative before request for acceptance and final payment for work.

1. Fees for all permits, which are issued by the City of Hartford Public Works and/or Licenses and Inspections, are waived except for the fee to be paid to Licenses and Inspections for the State Educations Fee of $0.22 per $1,000.00 and a $25 permit fee.

B. The Contractor shall include in the work, without extra cost to Owner, any labor, materials, services, apparatus, drawings, (in addition to contract drawings and documents) in order to comply with all applicable laws, ordinances, rules and regulations whether or not shown on Drawings and/or specified.

C. All materials furnished and all work installed shall comply with the rules and recommendations of the National Board of Fire Underwriters, with all requirements of Local Utility companies, with the recommendations of Fire Insurance Rating.
organization having jurisdiction, and with requirements of all governmental
departments having jurisdiction.

1.14 REFERENCE STANDARDS

A. For products specified by association or trade standards, comply with requirements of
the standard, except when more rigid requirements are specified or are required by
applicable codes.

B. The date of the standard is that in effect as of the bid date, except when a specific
date is specified.

1.15 PROJECT MEETINGS

A. Project meetings shall be held on a basis subject to the discretion of the Owner and/or
Owner’s Representative. The Contractor’s attendance at these meetings is mandatory
and is required in order to resolve construction issues and present project updates.

1.16 PERMITS, INSPECTION AND TESTING REQUIRED BY GOVERNING
AUTHORITIES

A. If the Contract Documents, laws, ordinances, rules, regulations or orders of any
public authority having jurisdiction require any portion of the work to be inspected,
tested or approved, the General Contractor shall give the Owner’s Representative and
such Authority timely notice of its readiness so the Owner’s Representative may
observe such inspection and testing.

B. General Contractor shall bear all costs associated with the acquisition of and
compliance with all fees and permits required for the work, unless otherwise
provided for herein.

1.17 CUTTING, CORING, PATCHING, UNLESS OTHERWISE INDICATED

A. The General Contractor shall do all cutting, coring, fitting and patching of his work
that may be required to make its several parts come together properly and fit it to
receive or be received by work of Subcontractors shown upon all Contract
Documents and Specifications.

B. Expense caused by defective or ill timed work shall be borne by party responsible at
no additional expense to the Owner.

C. The General Contractor shall not endanger any work by cutting, coring, excavating,
or otherwise altering the work and shall not cut or alter the work of any or other
Subcontractor without the consent of the Resident Engineer.

D. Where field cutting and coring are authorized or directed, the General Contractor
shall provide adequate reinforcement of the weakened area in such form as is
approved by the Resident Engineer.
1.18 DEBRIS REMOVAL

A. The Contractor shall remove all debris from the job site on a daily basis.

B. Contractor shall not store debris or stockpile materials that in any way restrict the use of driveway or dwelling to the property. The Contractor shall immediately remove any materials from storage locations if requested to do so by the Owner or Owner’s Representative. Such moves shall be made at the sole expense of the Contractor.

1.19 FIELD MEASUREMENTS

A. Although care has been taken to ensure their accuracy, the dimensions shown for existing items and structures are not guaranteed. It is the responsibility of the General Contractor to verify these dimensions in the field before fabricating any construction component. No claims for extra payment due to incorrect dimensions will be considered.

B. The General Contractor shall take responsibility for determining means and methods necessary to schedule and install materials and equipment in the proper locations. No additional compensation will be allowed for partial demolition and subsequent patching necessary to install large or ill-timed equipment.

1.20 SUPERVISION OF WORK

A. The Contractor shall be held directly responsible for the correct installation of all work performed under this Contract. He must make good repair, without expense to the Owner of any part of the work which may become inoperative on account of leaving the work unprotected or unsupervised during the construction of the system or which may break or give out in any manner by reason of poor workmanship, defective materials or any lack of space to allow for expansion, contraction of the work during a period of one year from date of final acceptance of the work by the Owner.

1.21 SAFETY REGULATIONS

A. These Contract Documents, and the construction hereby contemplated shall be governed at all times by applicable provision of all Federal and State laws.

1.22 PHASING AND PRIORITIES

A. Attention is drawn to the interlocking nature of much of the Work. The General Site Contractor shall have the responsibility for coordinating the scheduling and sequencing of all of the work to ensure the project schedule is met. Any issues or conflicts that occur as part of this coordination effort that affect the overall project schedule or the ability of the General Site Contractor to complete the work shall be immediately reported to the City and the Engineer.

B. Pay careful attention to work scheduling and give careful thought to the sequencing of the work so that all work is performed expeditiously in the
appropriate order. Demonstrate on the construction schedule specified in this Specification, how related work is to be phased.

C. To expedite construction progress on this project, the General Contractor shall order all material immediately after the approval of Shop Drawings and shall obtain a fixed date of delivery to the project site for all materials ordered which shall not impede or otherwise interfere with construction progress.

D. The Contractor is responsible for reviewing all work that needs to be completed for the project prior to the start of construction. The Contractor shall order all items that have the potential to be long lead items as early as possible in order to avoid impacts to the construction schedule. The Contractor shall be solely responsible for the delay in construction schedule that results from a delay in ordering materials.

### 1.23 PROTECTION OF PROPERTY

A. The General Contractor shall save the Owner harmless from all claims arising from the use of public streets, sidewalks, and adjoining property for construction purposes.

B. Keep all access roads and walks clear of debris, materials, construction plant and equipment during site operation. Repair all elements and the like where disturbed by site operation and leave them in as good condition after completion of the work as before operation started.

C. Protect everything on the premises from injury by water, frost, wind, fire, accident or other cause, and any interference.

D. A 10’ temporary security fence shall be installed and maintained around the construction area for a minimum of six (6) months after completion of the project or until ordered by the City in order to prohibit use of the area during the turf establishment period. Any costs associated with this work shall be included in the overall costs of the work to be completed.

### 1.24 EXISTING UTILITIES/DIG-SAFE NOTIFICATION

A. Contractor shall notify public and private utility companies as required by law in advance of construction so that existing utilities may be accurately located and identified by the appropriate agency or utility.

### 1.25 TIME LIMIT

A. The following schedule shall apply to the work of this Contractor:

The Contractor shall be SUBSTANTIALLY COMPLETE with all work of this contract within 90 calendar days. Afterwards the Contractor will provide required maintenance to ensure proper turf establishment growth up to April 1, 2011 at which time the field will be turned over for owner use.
1.26 PROJECT SIGN

A. The Contractor shall erect a Project Sign at two (2) locations as directed by the city. The project sign should be located so as not to require relocation during construction. Proposed location and proposed text and face of sign shall be approved by the Owner’s Representative. Contractor shall submit a Shop Drawing illustrating scaled image of sign face for approval by Owner’s Representative. Sign shall be 6’ x 8’ and shall include:

a. City of Hartford  
b. Mayor Eddie Perez  
c. City Seal  
d. Hyland Park Field Improvements  
e. The name of the Contractor  
f. Vanasse Hangen Brustlin, Inc.

B. The sign shall remain on-site until Project Closeout and shall be removed at the completion of the project.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION 01010
SECTION 01020
ALLOWANCES

PART 1—GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of Section 02000, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within Section 02000, GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

1.03 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. A Contingency Allowance is hereby established. In all cases, this allowance includes installation if applicable. Allowance has been established in lieu of additional requirements. Additional requirements will be issued by Contingency Authorization (CA).

B. Types of allowances include the following:

1. Contingency allowances.

1.04 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Owner’s Representative for Owner’s purposes and only by Contingency Authorizations that indicate amounts to be charged to the allowance.

B. Contractor’s overhead, profit and related costs for products and equipment ordered by Owner under the contingency allowance area included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Contingency Authorizations authorizing use of funds from the contingency allowance will include Contractor’s related costs and reasonable overhead and profit margins.
D. At Project Closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.02 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.03 SCHEDULE OF ALLOWANCES

A. Contingency Allowance No. 1: Include $25,000 (Twenty-five thousand dollars) as a contingency allowance for this project.

END OF SECTION 01020
SECTION 01030
ALTERNATES

PART 1—GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of Section 02000, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within Section 02000, GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

1.03 REQUIREMENTS

A. Add Alternate No. 1

1 The Contractor shall construct bituminous pathways around the southern and western portions of the proposed ball field as well as the pathway leading to the southern parking lot including all stabilization fabric and processed aggregate base associated with the pathway installation. This alternate will also include two ornamental benches, one trash receptacle, three removable bollards, one drinking fountain, associated concrete pads for benches, trash receptacles, and drinking fountain, and the proposed water line to support the drinking fountain. The alternate will also include any stripping and stockpiling of existing topsoil, new loam and seed, grading, and any other materials, labor, and incidentals needed to complete the tasks defined above.

B. Add Alternate No. 2

1 The Contractor shall furnish and install the 4 foot high chain link fence behind the backstop, the double swing gate in this location, and the press platform and ramp. This alternative shall include all necessary materials, labor, and incidentals needed to complete the tasks defined above.

C. Add Alternate No. 3

1 The Contractor shall construct bituminous pathways that tie into alternate no. 1 at the southeast corner of the proposed ball field and extend north toward New Britain Avenue and will include all of the stabilization fabric and processed aggregate base associated with the pathway installation. This Alternate will also include four ornamental benches, two trash receptacles,
and associated concrete pads for benches and trash receptacles. The alternate will also include any other materials, labor, and incidentals needed to complete the tasks defined above. The alternate will not include any stripping and stockpiling of existing topsoil, new loam and seed, and grading for this area as it is covered in the base bid for the project. The contractor shall account for a credit to the city in this alternate for the amount of loam and seed that will not be needed should the pathway be constructed. The lump sum bid for this alternate should be the net additional costs including the credit that would be given.

D. Add Alternate No. 4

1 The Contractor shall furnish and install a new scoreboard to replace the existing scoreboard located beyond the outfield fence of the proposed ball field. The scoreboard shall be by Fair-Play Scoreboards model #BA-7109 or approved equal. The location of the control panel shall be determined by the owner. This alternate shall include all necessary wiring, conduit, materials, labor, and incidentals needed to complete the installation of the scoreboard.

2 The Contractor shall furnish and install a new sound system at the proposed ball field. The PA system shall be Technomad Turnkey PA System Model IPA2-Medium Install PA System or approved equal. The alternate shall include all wiring, conduit, electrical services, installation, housing materials, equipment, mountings, materials, labor, and incidentals needed to complete the installation of the PA system. The speakers shall be mounted on the top of the proposed backstop and shall be directed toward the bleachers. The location of the control panel shall be determined by the owner.

E. Add Alternate No. 5

1 In lieu of furnishing new off-site topsoil within the 6 foot high chain link fence, installed under the base bid, the Contractor shall utilize the existing topsoil and amend the onsite soils as necessary to meet specifications. The cost for this alternate shall include the removal and disposal of any and all excess and/or unsuitable materials. The lump sum cost for this alternate should reflect the cost to delete the specified new off-site topsoil from the base bid and replace it with amending the existing soil to meet the specifications. Note that this alternate does not apply to the topsoil outside the limits of the 6 foot high chain link fence.

END OF SECTION 01030
PART 1—GENERAL

1.01 DESCRIPTION

A. This Section specifies the general requirements for the site work included in the Contract.

B. These requirements supplement those contained in the Standard General Conditions of the Construction Contract and their Supplemental Conditions.

C. References are included in this Section to Articles of the General Conditions to call the Contractor's attention to frequently needed requirements.

1.02 PERMITS

A. Unless otherwise provided, the Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all charges and inspection fees necessary for the prosecution of the Work, and shall pay all charges of utility owners for connections to the Work.

1.03 LAWS AND REGULATIONS

A. Contractor shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work.

B. If Contractor performs any work that is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses and damages caused by, arising out of or resulting therefrom.

1.04 UTILITIES

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others.

Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and
The cost of all of the following will be included in the Contract and Contractor shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the Underground Facility. If Engineer concludes that a change in the Contract Documents is required, revised plans and specifications will be issued, to reflect and document such consequences. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

B. Contractor shall notify all municipal agencies and utility companies owning or operating utilities, of proposed work affecting the utilities, or agencies.

C. Contractor shall give written notification within the time period required by the agency or company for advance notification. A copy of the notification shall be furnished to the Engineer.

D. Contractor shall notify "CALL BEFORE YOU DIG" before commencing any work in the vicinity of existing subsurface utilities.

E. Contractor shall secure in place existing utilities whose support is affected by the work and cooperate and assist the agency or company operating the utility in maintaining the utility services. Contractor shall correct any damage to the utilities caused by construction operations by repair, or replacement, as required by the utility Owner. When the repair or replacement is made by the utility Owner, Contractor shall pay all costs assessed by the utility Owner for the work.

F. If the existing utilities are found to conflict with the proposed work, the Contractor shall protect and maintain the utilities and take measurements to determine the location, type and dimensions of the utility. The information shall be furnished to the Engineer who will determine the changes required in the proposed work or existing utilities to resolve the conflict as soon thereafter as is reasonable.

G. Contractor to verify the location, size, invert elevation and type of existing facilities at all points of connection prior to ordering new utility materials.
1.05  **SOIL SUPPORT**

A. Contractor shall furnish and install excavation soil support devices or use soil strengthening techniques required to perform excavations in accordance with the current requirements of the Department of Labor, Occupational Health and Safety Administration and all State and Municipal laws and regulations. All costs associated with this work shall be included in the cost of the work and will not be eligible as extra work.

1.06  **REFERENCE STANDARDS**

A. References are made to technical societies, organizations and groups using the following abbreviations. All work so referred shall conform to the current edition of the referenced standard.

**GENERAL REFERENCE STANDARDS**

- AASHTO: American Association of State Highway Transportation Officials
- ACI: American Concrete Institute
- ACOE: United States Army Corps of Engineers
- AOAC: Association of Official Agricultural Chemists
- AGC: Associated General Contractors of America
- ANSI: American National Standards Institute
- ASTM: American Society for Testing and Materials
- AWPA: American Wood Preservers Association
- AWWA: American Water Works Association
- NEMA: National Electrical Manufacturers Association
- NEWWA: New England Water Works Association
- OSHA: Occupational Safety and Health Administration
- UL: Underwriters Laboratory

1.07  **TRAFFIC MAINTENANCE**

A. Contractor shall maintain access to the site and through the work zones for personnel and vehicles of emergency services, utility agencies, inspection services and others authorized to enter, move about and work on the site.

B. When work is required on public roadways, Contractor shall furnish, install, maintain and remove all signs, drums, barricades, steel plates and other devices required by the State or municipality to maintain and protect pedestrians and vehicular traffic.

C. Protective measures shall be installed at site access points to prevent mud and other debris from being deposited on the public roadways by construction traffic. The public roadways shall be swept as required to remove any deposits.
1.08 STATE AND LOCAL REFERENCE STANDARDS

<table>
<thead>
<tr>
<th>Building Code</th>
<th>Reference Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEP</td>
<td>Connecticut Department of Environmental Protection</td>
</tr>
<tr>
<td>ConnDOT</td>
<td>Connecticut Department of Transportation</td>
</tr>
<tr>
<td>City of Hartford</td>
<td>Standard Technical Specifications for Streets, Roads, Traffic and Streetscape Construction</td>
</tr>
</tbody>
</table>

END OF SECTION 02000
SECTION 02210
SITE PREPARATION AND DEMOLITION

PART 1—GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for site clearing and structure demolition.

B. The work includes:

1. Protection of existing vegetation to remain

2. Clearing and grubbing

3. Selective clearing and thinning

4. Demolition of structures, retaining walls, signage, light standards, foundations and appurtenances

5. Removal and abandonment of utilities

6. Removal and disposal of any existing site improvements, fences, or athletic equipment that is called for removal in the contract documents.

7. Filling or removal of underground tanks and piping

8. Disposal of material from clearing, grubbing, thinning and demolition in approved off-site disposal areas

9. Filling of voids and excavations resulting from the work

1.02 RELATED SECTIONS

A. Other specification Sections which directly relate to the work of this Section include:

1. Section 02300—EARTHWORK

2. Section 02270—EROSION CONTROL

1.03 SITE CONDITIONS

A. Site conditions existing during the bidding period will be maintained by the Owner insofar as practical.

B. Actual site condition variations that differ from those of the bidding period that affect site preparation operations shall be brought to the attention of the Owner prior to the commencement of any site work.
1.04 SUBMITTALS

A. The Contractor shall submit 5 copies of the following information to the Engineer for review before commencing any site or demolition work:

1. All permits and notices authorizing demolition
2. Certificates of utility service severances
3. Permits for transport and disposal of debris
4. Demolition procedures and operational sequence

PART 2—PRODUCTS

2.01 TREE PROTECTION FENCING

A. Tree protection fencing shall be orange plastic web fence, 4 feet high minimum. Wood stakes shall be six-foot long by 1 inch by 1 inch square driven a minimum of two feet into the ground. Posts shall be spaced eight feet (maximum) on center.

PART 3—EXECUTION

3.01 PROTECTION

A. The Contractor shall flag the limits of clearing shown on the drawings by accurate field survey with marked stakes or other means acceptable to the Engineer. Trees to remain and trees to be saved and transplanted shall be clearly identified during this staking process. The Engineer shall be notified a minimum of five working days prior to scheduled commencement of clearing operations to review the flagged limits. Adjust the clearing limits as directed by the Engineer.

B. Before clearing begins, protect designated trees to remain with tree protection fencing to the approximate diameter of foliage to prevent damage to the trunk, foliage and root system by construction equipment and procedures. Trees to be transplanted may be removed to another location as detailed in Section 02950, PLANTING, or may be left in place and be protected in similar fashion as the trees to remain as described above.

C. Place tree protection fencing as required to protect other plants, adjacent property areas to remain uncleared, monuments and existing improvements from damage.

D. The Contractor shall repair or replace immediately any damage to existing trees or root systems that are to remain and to trees that are to be transplanted. The Contractor shall employ an arborist licensed in the State of Connecticut to determine the repair and replacement needs and methods for approval by the Engineer.
E. Replace damaged shrubs and other vegetation designated to remain with the same size and species.

F. The tree protection fencing shall be maintained for the duration of construction operations. The work shall include immediate replacement of any damaged fence. Fencing shall be removed from the site at the completion of construction operations. The fencing disposal shall be in accordance with local, state and federal laws and regulations for the disposal of the material.

3.02 UTILITIES

A. Notify all corporations, companies, individuals or local authorities owning, or having jurisdiction over, utilities running to, through or across areas to be affected by demolition operations.

B. Locate and identify existing utilities that are to remain and protect them from damage.

C. Have all discontinued utility services disconnected in accordance with the requirements of the utility owner.

3.03 CLEARING AND GRUBBING

A. Clearing shall include cutting, removal, and off-site disposal of trees, bushes, shrubs, stumps, fallen timber, refuse, trash, fencing and other incidental materials not required for reuse on the site.

B. The Contractor shall grub the area within the clearing limits to completely remove stumps and root systems, except for those to remain or to be transplanted.

C. Depressions, excavations and voids resulting from the removal of stumps or roots shall be filled with suitable material and compacted as specified under Section 02300.

3.04 SELECTIVE CLEARING AND THINNING

A. Selective clearing and thinning shall be completed as directed by the Engineer. Approximate limits of selective clearing and thinning are shown on the Drawings.

B. The work shall include the removal of dead and diseased tree limbs and plants, and pruning and removal of live vegetation that interferes with the growth of other trees and plants. Areas of dense growth shall be thinned to provide room for healthy growth.

3.05 REMOVAL AND ABANDONMENT OF UTILITIES

A. All existing structures, utilities, and appurtenances of any kind shall be completely removed within the limits of excavation for the new buildings.
B. Outside the limits of excavation for the new buildings, all abandoned utilities and utility structures greater than 8 inches in diameter located at least 4 feet below bottom of finished grade shall be sealed with concrete or brick masonry at the limit of excavation. All utilities shall be entirely removed within 4 feet of finished grade.

C. Manholes and catch basins designated to be abandoned shall have all lines plugged with brick and mortar prior to filling with sand or gravel. The top 4 feet of these structures shall be removed and the bottom slab broken up prior to filling.

D. The Contractor shall remove frames, covers, and grates from manholes, catch basins and gate valves and satisfactorily store and protect them until they are required for reuse in the work. Existing frames, covers and grates determined by the Engineer to be unsuitable for reuse shall be removed from the site.

3.06 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from site all materials resulting from demolition operations.

B. No burning of any material will be allowed.

END OF SECTION 02210
SECTION 02240
DEWATERING AND CONSTRUCTION SURFACE WATER

PART 1—GENERAL

1.01 DESCRIPTION

A. This Section specifies the requirements for control of surface and subsurface water within the site.

B. The work includes:

1. Control of surface water runoff to prevent flooding of excavations, trenches and adjacent properties, and the saturation and loosening of soils.

2. Removal of subsurface water from excavations and trenches.

3. Provision of equipment and facilities to remove sediment and control the rates and volumes of disposal of surface and subsurface waters removed from the work areas.

4. Provisions for the protection of adjacent and downgradient, properties and environmental resources.

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this Section include:

1. Section 02210—SITE PREPARATION AND DEMOLITION
2. Section 02300—EARTHWORK
3. Section 02270—EROSION CONTROL

1.03 DEWATERING SYSTEM REQUIREMENTS

A. The Contractor shall design the dewatering systems to:

1. Effectively reduce the hydrostatic pressure and lower the groundwater levels to a minimum of 2 feet below the bottom of excavations;

2. Develop a substantially dry and stable subgrade for the proposed work;

3. Prevent damage to adjacent properties, buildings, structures, utilities and other facilities;

4. Ensure that, after 12 hours of initial pumping, no soil particles will be present in the discharge.

5. Retain all sediments on-site within the work area.
B. Locate dewatering facilities where they will not interfere with utilities and construction work to be done by others.

C. Modify dewatering equipment and procedures when operations threaten to cause damage to new or existing facilities or adjacent areas not within the limit of work.

1.04 SUBMITTALS

A. Prior to installation of the dewatering system, submit 5 copies of working drawings and design data prepared by a registered professional engineer with the following information:

1. The proposed types of dewatering systems;

2. Arrangement, location and depths of system components;

3. Complete description of equipment and instrumentation to be used including installation, operation and maintenance procedures;

4. Types and sizes of filters;

5. Design calculations demonstrating adequacy of the proposed system and equipment; and


7. All permits required for the work.

B. Submit records required in Article 3.03.

PART 2—PRODUCTS

(Not Applicable)

PART 3—EXECUTION

3.01 SURFACE WATER CONTROL

A. Intercept and divert surface water runoff away from excavations through the use of dikes, curb walls, ditches, pipes, sumps or other approved means.

B. Provide and maintain ditches of adequate size to collect and prevent surface and subsurface water seepage from entering the excavations. Divert the water to settling basins or other approved equipment required to reduce the amount of fine particles before discharge into drainage pipes and natural water courses. If a drainage system or water course is silted or becomes blocked due to dewatering operation, it shall be cleaned by the Contractor at no additional cost to the Owner. Any enforcement actions or fines resulting from improper
dewatering and/or discharge of turbid water and sediment to protected areas shall be the sole responsibility of the Contractor.

### 3.02 DEWATERING EXCAVATIONS

A. Accomplish dewatering in accordance with the means and methods submitted as required in Article 1.04. Keep the Engineer advised of any changes required to accommodate field conditions and, on completion of the dewatering system installation, revise and resubmit the information required to show the installed system.

B. Perform dewatering operations to lower the groundwater level in excavations as required to provide a stable, dry subgrade for the prosecution of the proposed work.

C. Maintain dewatering operations in a manner that prevents buildup of excessive hydrostatic pressure and damage to structures, and the subgrade.

D. Do not allow water to accumulate in excavations. Contractor shall provide and maintain ample means and devices to remove promptly, and to dispose of properly, all water entering excavations and to keep them dry until the proposed work is completed.

E. Do not discharge water to protected environmental resources without treatment to remove suspended solids and sediments.

F. No pipe shall be laid in water. No masonry shall be laid in water, and no water shall be allowed to inundate new concrete and new brick masonry within 48 hours after installation. Contractor shall constantly guard against the possibility of flotation of pipe or structures after installation. Backfill or other means shall be placed promptly to prevent this occurrence.

### 3.03 RECORDS FOR WELL SYSTEMS

A. When well point, or other type of well systems, are used for dewatering, the following information shall be obtained and recorded:

1. The average flow rate and time of operation of each pump used in the dewatering system. Provide appropriate devices, such as flow meters, for observing the flow rates. Submit the data, in tabular form, during the period that the dewatering system is in operation.

2. The groundwater elevations during the period that the dewatering system is in operation. Submit observation records daily within 24 hours of reading.

3. During the initial period of the dewatering, make required observations on a daily basis. If, after a period, dewatering operations have stabilized, observations may be changed to longer intervals, as accepted by the Engineer.

### END OF SECTION 02240
SECTION 02270
EROSION CONTROL

PART 1—GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for temporary erosion control provisions.

B. The work includes:

1. Providing and maintaining all temporary erosion control measures shown on the Drawings and required by the Engineer during the life of the Contract to control soil erosion and water pollution.

2. The installation and maintenance of additional silt fence, berms, ditches, sedimentation basins, construction exits, fiber mats, catchbasin filters, straw, netting, gravel, trenches, mulches, grasses, slope drains and other approved erosion control devices or methods, needed to protect any areas on or off site in accordance with [the Stormwater Pollution Prevention Plan to be developed by the Contractor] which is required by the EPA.

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this Section include:

1. Section 02210—SITE PREPARATION AND DEMOLITION
2. Section 02240—DEWATERING AND CONSTRUCTION SURFACE WATER
3. Section 02300—EARTHWORK
4. Section 02930—PLANTINGS

1.03 DEFINITION AND COORDINATION OF EROSION CONTROL PROVISIONS

A. Permanent erosion control measures are defined as those elements that are to be incorporated into the final project product, including but not necessarily limited to, such items as; finish paving and landscape, detention basin forebays, sedimentation control structures (Voctechnics, Stormceptor, catch basins, etc.), swales and ditches, berms, and other such items.

B. Temporary erosion control measures are defined as those elements that are required by permit approvals and necessary to be installed by the Contractor to meet Federal, State and Local regulations for the construction program, including, but not necessarily limited to, such items as; silt fences, berms, portable sedimentation basins, haybales, check dams, and other such items, all of which shall be removed by the Contractor after installation of permanent erosion control measures, stabilization of the site, and prior to final completion of the project.
C. The temporary control provisions shall be coordinated with the permanent erosion control features to the extent practical to ensure economical, effective and continuous erosion control throughout the construction and post-construction period.

1.04 LAWS AND REGULATIONS

A. Compliance with the EPA NPDES Stormwater Regulations is the sole responsibility of the Contractor.


1.05 PRIOR TO CONSTRUCTION

A. Prior to the start of the construction, the Contractor shall submit to the Engineer: schedules for the construction of required stormwater detention basins, temporary and permanent erosion and sediment control work, clearing and grubbing, grading, structures at watercourses, construction, and paving. No work shall be started until control schedules and methods of operations have been submitted to the Engineer.

B. Proof of submittal of the Notice of Intent for an NPDES General Permit for Construction Activities under EPA Regulations 40 CFR Parts 9, 122, 123 and 124.

1.06 CONSTRUCTION OPERATIONS

A. When in the opinion of the Engineer it becomes necessary, the Engineer will inform the Contractor of construction procedures and operations that jeopardize erosion and sedimentation control provisions. If these construction procedures and operations are not corrected promptly, the Owner may suspend the performance of any or all construction until corrections have been made, and such suspension shall not be the basis of any claim by the Contractor for additional compensation from the Owner nor for an extension of time to complete the Work.

PART 2—PRODUCTS

2.01 MATERIALS

A. Temporary stands of grasses and legumes shall be used on areas exposed for periods greater than one month but not greater than 12 months. All permanent grass areas planted with temporary erosion control seed shall be replaced with permanent seed. Seed mixtures shall be selected from Figure TS-2 of the Guidelines. Seed selection and application rate shall be approved by the Engineer prior to application.

B. Erosion Control Blanket/Fabric Netting

Curlex blankets, as manufactured by American Excelsior Company
Polyjute Style 465 GT, as manufactured by Synthetic Industries or approved equivalent.

Tensar Erosion Mat, TM2000, TB1000 or TM3000, as manufactured by the Tensar Corporation

C. Hay bale sediment traps consisting of hay bales banded with wire or nylon tape (minimum two bands for bale) approximately two-feet, six-inches in length.

   Stakes for hay bales shall be 1 inch by 1 inch by 3 feet long, or approved equal.

D. Silt fence fabric shall be 100X, as manufactured by Mirafi.

E. Filter fabric at construction entrance shall be 600X, as manufactured by Mirafi.

PART 3—EXECUTION

3.01 EROSION CONTROL—HAY BALES

A. Hay bales shall be installed at the locations, shown on the Drawings and in general as follows:

1. Below small disturbed areas where the contributing area (disturbed and undisturbed) is less than one acre.

2. Toe of slope of embankment construction to filter all runoff flowing to off-site discharges. Locate the bales 5-10 feet down gradient from the toe of slope, generally on the contour.

3. Toe of temporary earthwork stockpile slopes.

4. Surrounding completed catch basins in depressions and low spots.

5. Pumping Settling Basins.

6. Other locations shown on the Contract Drawings and required by laws, regulations, and permits.

B. Tightly abut hay bales in a single row lengthwise to form a continuous barrier. Bindings shall be orientated along the sides rather than along the tops and bottoms. Secure bales in place with two stakes per bale. Drive the first stake in each bale toward the previously installed bale. The bales shall be trenched 4 inches into the ground. Soil shall be constructed on the upside slope of the bales to a minimum depth of 4 inches. Deteriorated, destroyed or rotted bales shall be replaced immediately. Sediment shall be removed and disposed of periodically from behind the hay bales. The accumulated sediment shall not be allowed to rise above the mid height of the bale. All sediment, hay bales and appurtenances shall be removed and disposed of at the completion of the Contract.
3.02 TEMPORARY EROSION CONTROL MATS

A. Erosion control mats shall be installed in accordance with the manufacturer’s recommendations.

B. Areas to receive mats shall be smooth graded and compacted. Remove all rocks, dirt clods, vegetation and other obstructions that may cause damage to the mats.

C. Unroll mats parallel to the direction of water flow and lay flat against the ground. Overlap roll ends 1 to 2 feet with upslope mat on the top to prevent uplift of mat end by water flow. Overlay adjacent edges of mat by six inches. Extend mat 2 to 3 feet above the crest of steep slopes and anchor by excavating a 6 inch deep trench, and secure end of mat in trench, backfill and compact. Secure mat to the ground using staples or pins furnished by manufacturer of mat.

3.03 SILT FENCE

A. Silt fence shall be installed at locations as shown on the Drawings.

B. Supporting posts shall be spaced 4 feet on center, and driven at least one foot into the ground. Posts shall be 1-1/2 inch square or heavier wood posts, or standard steel posts.

C. Fabric shall be anchored in a 6-inch deep trench dug on the upslope side of the posts. The trench shall be at least 6 inches wide. The fabric shall be laid in the trench, backfilled and compacted.

D. Fabric rolls shall be spliced at posts. The fabric shall be overlapped 6 inches, folded over and securely fastened to posts.

E. Silt fences shall be inspected within 24 hours of each rainfall event.

3.04 CONSTRUCTION REQUIREMENTS—TEMPORARY SEDIMENT CONTROL

A. The Contractor shall construct all permanent erosion and sediment control features at the earliest practical time as outlined in the accepted schedule. Temporary erosion and sediment control measures shall be used to correct conditions that develop during construction which were unforeseen, but are needed prior to installation of permanent control features, or that are needed temporarily to control erosion or sedimentation which develops during construction operations.

B. Where erosion is likely to be a problem, clearing and grubbing operations shall be scheduled and performed so that grading operations and permanent erosion and sediment control features can follow immediately thereafter, if conditions permit; otherwise, temporary control measures will be required between successive construction stages.

C. Contractor shall be responsible for controlling erosion within the project area and retaining sediment on-site away from sensitive environmental resources. Any fines, construction
delays, remedial actions, or incarceration resulting from the Contractor’s failure to comply with these provisions shall be the responsibility of the Contractor and not the Owner.

D. Failure by the Contractor to control erosion, pollution, and siltation shall be cause for the Owner to employ outside assistance to provide the necessary corrective measures. The cost of such assistance, including engineering costs, will be charged to the Contractor and appropriate deductions made to the Contractor's monthly progress payment request.

E. The Contractor shall remove and properly dispose of sediment from control facilities as required by the Engineer. The Contractor shall modify and improve erosion and sedimentation control facilities and replace deteriorated hay bales and other devices as required by the Engineer.

F. Minimum temporary and permanent erosion and sedimentation control measures are shown on the Drawings. The Contractor shall strictly adhere to the minimum provisions shown. Additionally, temporary measures shall be selected and constructed by the Contractor in consultation with the Engineer to accommodate changing field conditions that develop during construction.

G. The temporary sedimentation basins shall be maintained from the start of construction until construction of the permanent detention basins and/or stormwater system is completed and perimeter areas are stabilized. A temporary outlet shall be constructed above the expected sediment levels. Construction of the basins shall be sequenced so that the temporary outlet is installed and basin embankment is constructed with the material available from the initial site excavations.

3.05 MAINTENANCE OF EROSION CONTROL MEASURES

A. The Contractor shall check the condition of erosion and sedimentation control devices daily and maintain them in good operating condition. Hay bales shall be replaced when deteriorated.

B. The Contractor shall inspect the condition of diversion dikes and ditches, filter berms, interceptor dikes, sediment basins and other erosion and sedimentation control devices after each rainstorm and during major storm events. Repairs shall be made as necessary.

C. During construction, temporary outlets of the drainage systems shall direct the flow to temporary or permanent sedimentation basins.

D. Temporary soil erosion and sedimentation control devices shall be removed and adjacent areas outside the limits of grading restored upon completion of the work or when required by the Engineer.

END OF SECTION 02270
PART 1—GENERAL

1.01 DESCRIPTION

A. Provide facilities, labor, materials, tools, equipment, appliances, transportation, supervision, and related work necessary to complete the work specified in this section, and as shown on the Drawings.

B. Work performed under this section of the specifications shall be subject to the General Conditions, Supplementary Conditions and Division 1 General Provisions of the Contract Documents.

C. The work of this section includes but is not necessarily limited to:

1. Excavation, fill, and backfill, as indicated or required, including compaction.

2. Excavation, as required, to the lines and grades indicated on the Drawings.

3. Excavation and offsite disposal of unsuitable or excess materials unless on-site locations are designated. Excavation shall include removal and satisfactory disposal of all unclassified material encountered throughout the site.

4. Rough grading, including placement, moisture conditioning and compaction of fills and backfill.

5. Placement of base and subbase course materials under structures, pavements, slabs and footings, including compaction.

6. Trench excavation, bedding and backfill for structures, foundations, and utilities, including compaction.

7. The removal, hauling and stockpiling of suitable excavated materials for subsequent use in the work. Stockpiling shall include protection to maintain materials in a workable condition.

8. Rehandling, hauling and placing of stockpiled materials for use in refilling, filling, backfilling, grading and such other operations.

9. Protect and preserve all existing buildings, pavements, and utilities to remain.

10. Furnishing and installing all sheeting, shoring, and bracing of structural and trench excavations and its satisfactory removal, unless otherwise directed to have it remain in place.

11. Environmental controls.
12. Providing products in sufficient quantities to meet the project requirements.

13. Providing adequate pumping and drainage facilities to keep the work area sufficiently dry.

14. Obtain all required permits, licenses, and approvals of appropriate municipal and utility authorities, prior to commencing the work of this Section, and pay costs incurred therefrom.

D. Provide facilities, labor, materials, tools, equipment, appliances, and related work necessary to provide and maintain erosion control during construction operations. All erosion control measures shall be installed prior to earthwork operations and shall be maintained according to plans and other sections of the specifications.

E. Contractor shall be responsible for notifying all affected utility companies and Dig Safe before starting work.

1.02 RELATED SECTIONS

A. Carefully examine all of the Contract Documents for requirements which affect the work in this section. Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

Section 02000 — GENERAL REQUIREMENTS
Section 02210 — SITE PREPARATION AND DEMOLITION
Section 02240 — DEWATERING AND CONSTRUCTION SURFACE WATER
Section 02270 — EROSION CONTROL
Section 02930 — PLANTING

1.03 LAWS AND REGULATIONS

A. Work shall be accomplished in accordance with regulations of local, county and state agencies and national or utility company standards as they apply.

1.04 QUALITY ASSURANCE

A. The Owner may retain and pay for the services of an independent testing and inspection firm and/or a Geotechnical Consultant to perform on-site observation and testing during the various phases of the construction operations. The scope of services will be determined by the Owner and the independent testing and inspection firm and/or the Geotechnical Consultant and will be provided to the contractor. The Owner reserves the right to modify or waive the services of the independent testing and inspection firm and/or the Geotechnical Consultant. The services of a Geotechnical Consultant/Inspection and testing firm may include, but not necessarily be limited to, the following:
1. Observation during excavation and dewatering of building and controlled fill areas.

2. Laboratory testing and analysis of fill materials as specified herein and proposed by the Contractor for incorporation into the Work.

3. Observation of construction and performance of water content, gradation and compaction tests at a frequency and locations that he shall select. The results of these tests will be submitted to the Owner, Engineer, and Contractor on a timely basis so that action can be taken to remedy indicated deficiencies. During the course of construction, the Geotechnical Consultant will advise the Owner in writing if at any time in his opinion the Work hereunder is of unacceptable quality. Failure of Geotechnical Consultant to give notice, shall not excuse the Contractor from latent defects discovered in his work.

B. The Contractor shall make provisions for allowing observations and testing of Contractor’s Work by the independent testing and inspection firm and/or the Geotechnical Consultant.

The presence of the independent testing and inspection firm and/or the Geotechnical Consultant does not include supervision or direction of the actual work of the Contractor, his employees or agents. Neither the presence of the independent testing and inspection firm and/or the Geotechnical Consultant, nor any observations and testing performed by them, nor failure to give notice of defects shall excuse the Contractor from defects discovered in his work.

C. Costs related to retesting due to unacceptable qualities of work and failures discovered by testing shall be paid for by the Contractor at no additional expense to Owner, and the costs thereof will be deducted by the Owner from the Contract Sum.

1.05 SUBMITTALS

A. Submit, in an airtight container for the testing laboratory, a 50-pound sample of each type of off-site fill material that is to be used at the site. Submit samples a minimum of one week prior to use of proposed material at the site. Submit samples to the testing laboratory and the Geotechnical Consultant (copy of these transmittal forms shall be sent to Engineer) or if no testing and/or Geotechnical Consultant is identified then the Engineer shall be the recipient of the samples. Use of these proposed materials by the Contractor prior to testing and approval shall be at the Contractor's risk.

B. The Engineer will be responsible for the approval or rejection of the suitability of all materials.

C. Submit the name of each material supplier and specific type and source of each material. Any change in source throughout the job requires approval of the Owner or Engineer.

D. For use of fabrics or geogrids, submit manufacturer's literature for approval by the Engineer.
1.06 COORDINATION

A. Prior to start of earthwork the Contractor shall arrange an on-site meeting with the Engineer, the independent testing firm, and the Geotechnical Consultant for the purpose of establishing the Contractor’s schedule of operations and scheduling observation and testing procedures and requirements.

B. As construction proceeds, the Contractor shall be responsible for notifying the Engineer prior to the start of earthwork operations requiring observation and/or testing.

PART 2—PRODUCTS

2.01 MATERIALS

A. Subgrade is the material in excavation (cuts) and fills located below: subbase, base course layer for slabs, sidewalks, pavement, and other improvements.

B. Common Fill/Ordinary Borrow shall be friable soil containing no stone greater than two-thirds (2/3) the loose lift thickness with a maximum stone size of twelve (12) inches in diameter. The material shall be essentially free of trash, ice snow, tree stumps, roots, and organic materials. The soil shall contain no more than 15 percent passing the #200 sieve.

C. Gravel shall consist of inert material that is hard, durable stone and coarse sand, free from loam, clay, surface coatings and deleterious materials, and shall conform to the following gradation:

<table>
<thead>
<tr>
<th>Sieve (ASTM D422)</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2-inch</td>
<td>50-85</td>
</tr>
<tr>
<td>No. 4</td>
<td>40-75</td>
</tr>
<tr>
<td>No. 10</td>
<td>30-60</td>
</tr>
<tr>
<td>No. 40</td>
<td>10-35</td>
</tr>
<tr>
<td>No. 100</td>
<td>5-20</td>
</tr>
<tr>
<td>No. 200</td>
<td>2-10</td>
</tr>
</tbody>
</table>

* Four inches (4") where placed as base below slab and pavement; One and one half inches (1 1/2") where placed as pipe bedding and backfill up to 24 inches above pipe; and elsewhere two thirds (2/3) the loose lift thickness.

D. Sand shall consist of clean, inert, hard, durable grains of quartz or other hard, durable rock, free from loam or clay, surface coatings and deleterious materials.

The allowable amount of material passing a No. 200 sieve as determined by AASHTO-T11 or ASTM D: 422 shall not exceed 10 percent by weight. The maximum particle size shall be 1/4-inch (i.e., 100 percent passing the No. 4 sieve).
In addition to the above criteria when sand is used for bedding concrete pavers and for utility bedding it shall conform to the following gradation.

<table>
<thead>
<tr>
<th>Sieve ASTM D422</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 4</td>
<td>100</td>
</tr>
<tr>
<td>No. 8</td>
<td>80 – 95</td>
</tr>
<tr>
<td>No. 16</td>
<td>55 – 85</td>
</tr>
<tr>
<td>No. 50</td>
<td>0 – 35</td>
</tr>
<tr>
<td>No. 200</td>
<td>0 – 5</td>
</tr>
</tbody>
</table>

E. **Crushed Stone** shall be composed of durable crushed rock consisting of angular fragments, free from a detrimental quantity of thin, flat, elongated pieces or shall be durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone.

The crushed stone shall be free from clay, loam or deleterious material.

Crushed Stone shall conform to the following gradations:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing By Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/2-Inch Stone</td>
</tr>
<tr>
<td>1 inch</td>
<td>---</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>---</td>
</tr>
<tr>
<td>5/8 inch</td>
<td>100</td>
</tr>
<tr>
<td>1/2 inch</td>
<td>85-100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>15-45</td>
</tr>
<tr>
<td>No. 4</td>
<td>---</td>
</tr>
<tr>
<td>No. 8</td>
<td>0-5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing By Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-1/2-Inch Stone</td>
</tr>
<tr>
<td>2 inch</td>
<td>100</td>
</tr>
<tr>
<td>1-1/2 inch</td>
<td>95-100</td>
</tr>
<tr>
<td>1-1/4 inch</td>
<td>---</td>
</tr>
<tr>
<td>1 inch</td>
<td>35-70</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>0-25</td>
</tr>
<tr>
<td>1/2 inch</td>
<td>---</td>
</tr>
</tbody>
</table>
F. Dense-graded Crushed Stone for subbase and base

Dense-graded Crushed Stone shall conform to the following gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing By Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 inch</td>
<td>100</td>
</tr>
<tr>
<td>1-1/2 inch</td>
<td>70-100</td>
</tr>
<tr>
<td>3/4 inch</td>
<td>50-85</td>
</tr>
<tr>
<td>No. 4</td>
<td>30-55</td>
</tr>
<tr>
<td>No. 50</td>
<td>8-24</td>
</tr>
<tr>
<td>No. 200</td>
<td>3-10</td>
</tr>
</tbody>
</table>

G. Structural Fill

1. Structural Fill shall be free from ice and snow, roots, sod, rubbish and other deleterious or organic matter. Structural fill shall conform to the following gradation requirements:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing By Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>30-95</td>
</tr>
<tr>
<td>No. 40</td>
<td>10-70</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-15</td>
</tr>
</tbody>
</table>

* Two thirds (2/3) of the loose lift thickness.

H. Choke Stone shall be hard, durable, clean, rock with a maximum rock diameter of 9 inches and shall conform to the following gradation requirements:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing By Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 inches</td>
<td>100</td>
</tr>
<tr>
<td>6 inches</td>
<td>75-100</td>
</tr>
<tr>
<td>2 inches</td>
<td>70-85</td>
</tr>
<tr>
<td>3/4 inches</td>
<td>45-60</td>
</tr>
<tr>
<td>No. 4</td>
<td>15-30</td>
</tr>
<tr>
<td>No. 40</td>
<td>5-15</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-10</td>
</tr>
</tbody>
</table>

I. Stone Fill shall be hard, durable, clean, washed rock with a minimum diameter of 1-1/2 inches and a maximum diameter of 3 inches with void ratio of 30 to 40 percent.
J. Filter Fabric/Geotextiles:

1. Geotextile Fabric shall be used to prevent soil intrusion into drains and/or assist in stabilizing soil subgrades to be laid on approved soil subgrades prior to placement of fill materials.

   a. Contractor shall use Mirafi 140N or equivalent filter fabric in drainage recharge systems, underdrain systems between crushed stone and granular soils, leaching areas or where indicated on the plans.

K. Controlled Low Strength Material or Controlled Density Fill

Controlled low strength material or controlled density fill shall be a cement concrete backfill material that flows like a liquid, supports like a solid when cured, and levels without tamping or vibrating to reach 100 percent compaction. The material shall be used primarily as a backfill in lieu of compacted fill. The material shall be proportioned to yield a 28—day minimum compressive strength of 200 pounds per square inch. The material shall be produced and installed in accordance with ACI 229R, and ACI 116R, with a mix formulation to be approved prior to placement of the material in the project.

L. Topsoil/Loam

See Section 02930 – PLANTING.

M. Processed Aggregate Base

All materials shall conform to the requirements of Subarticles M.05.01-1, M.05.01-2 and M.05.01-3 of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 816.

2.02 USE OF MATERIALS

Use of materials shall be as described below and as shown on the plans. Further details can be found in the project plans. Combinations or layering of materials may be necessary in certain instances such as for detention embankments, subsurface disposal areas, and riprap walls as examples.

A. Common/Ordinary Fill: Use common/ordinary fill for general grading, as backfill, embankment fill in areas outside the building and pavement limits. Stones larger than twelve inches (12") shall be removed prior to compaction.

B. Gravel: Use for pipe bedding backfill and backfill below pavement and slab as base course layer. Use for material placed "in the wet". Use for backfill behind retaining walls and retaining structures. Use for pipe and utility bedding.

C. Sand: Use for conduit bedding and initial backfill, and gas line bedding and backfill. Use for bedding and backfill of direct burial cables and/or flexible piping. Use for bedding and filling joints for concrete unit pavers.
D. **Crushed Stone:** Use crushed stone as a filter material around perforated pipe, as bedding for piping under wet subgrade conditions.

E. **Dense-Graded Crushed Stone:** Use dense-graded crushed stone for sub-base and base material.

F. **Structural Fill:** Use structural fill below subgrade elevation in building areas such as beneath floor slabs, foundations, and in other soil bearing situations. Structural fill shall also be used for backfill against building foundations and frost walls. Use structural fills below pavement gravel base course.

G. **Filter Fabric/Geotextiles:** To be used as filter barriers between drainage recharge systems, underdrain systems, wastewater absorption systems, and between natural earth material and backfill or other materials to assist in stabilizing soil subgrades.

H. **Filter Layer:** Use filter stone layer under riprap, stone for pipe ends, slope paving, channel paving and grouted channel paving or where indicated.

I. **Controlled Low Strength Material or Controlled Density Fill:** Shall be used for trench backfill, anti-floatation bases, and/or lightweight backfill.

J. **Topsoil/Loam:** See Section 02930 – PLANTING.

**PART 3—EXECUTION**

3.01 **CLEARING AND GRUBBING**

A. Cut and remove trees, remove stumps and brush. Legally dispose of off-site. Woodwastes may be chipped and shredded on-site and reused on-site with permission of the Engineer.

B. Strip all topsoil, subsoil and other unsuitables to its full depth within the Contract limits. In building areas, limits of excavation are defined in Section 3.03 B.

C. Under pavement areas, unsuitable materials shall be removed and disposed of by the Contractor in an Approved location, or if no Approved location exists on site to an Approved off site location and replaced with structural fill. Treatment of existing fill and removal of topsoil, subsoil and stumps are defined in Section 3.03 B.8. These materials shall be processed to remove all roots, stones larger than 3/4 inch in diameter and other deleterious materials. Stockpile as approved by the Engineer. Protect the topsoil from contamination by other materials.

D. Other Specification sections shall apply to clearing and grubbing under demolition and shall include air quality, erosion control and hazardous waste.
E. Remove all topsoil, subsoil, vegetative matter, and non-soil materials and, after screening out the roots, rocks greater than ¾ inch in size, and deleterious debris, separately stockpile the topsoil and subsoil materials.

3.02 DEWATERING

A. Provide, operate and maintain site and subsurface drainage and dewatering in an acceptable manner as required to complete the work throughout the course of the project.

B. Remove, by pumping or other means, water accumulated in excavations and within two (2) feet below subgrade until earthwork, utilities, concrete, and other work operations are complete. Dewatering shall be considered incidental to the defined work items and costs for performing same shall be included in the bid price(s) and no separate payment shall be made to the Contractor for dewatering operations.

C. Provide, maintain, and operate wells, pumps and related equipment, including standby equipment, of sufficient capacity to maintain excavations and trenches free of water 24 hours per day to enable all work to be conducted in-the-dry and to protect bearing surfaces from disturbance.

D. Water from excavations shall be disposed of in such manner as will not cause injury to public health, public and private property, existing work, work to be completed or in progress, roads, walks, and streets, or cause any interference with use of same by public. Concrete or fill shall not be placed in excavations containing free water.

E. Construction may require excavation below water level in soil. The Contractor shall complete this work in-the-dry to maintain the undisturbed condition of the bearing soil.

F. Maintain groundwater at least 12 inches below lowest exposed subgrade level. If the dewatering methods have not been adequate and the bearing soils are disturbed, remove disturbed soil and replace with compacted Structural Fill or lean concrete at no additional cost to the Owner.

G. Sumps shall be surrounded by suitable filter media to minimize the fines removed during pumping.

H. Pumped groundwater and surface water runoff shall be initially pumped to a settling basin to remove suspended solids prior to discharge. The Contractor shall furnish all treatment systems that are necessary for pretreatment of groundwater prior to discharge in accordance with all applicable permits and regulations.

I. Discharge of pumped water, either surface water runoff or groundwater, shall be in compliance with discharge criteria contained in permits issued by governing agencies, and all legal requirements and regulations. All permits shall be obtained by the Contractor.
3.03 EXCAVATIONS

A. General Definitions

1. Unclassified Materials

Unclassified excavation includes the satisfactory removal and disposal of all materials (except contaminated materials defined below) encountered regardless of the nature of the materials and shall be understood to include, but not be limited to, blastrock, bedrock, earth, hardpan, fill, foundations, pavements, curbs, piping, railroad track and ties, cobblestones, footings, bricks, concrete, abandoned drainage and utility structures, and debris. Drilling, blasting, excavation and disposal of rock shall be considered unclassified excavation and shall be included as a part of the contract price, with no separate payment items for its excavation and handling.

2. Contaminated Materials

a. The Contractor shall be familiar with the State of Connecticut DEP Hazardous Waste Regulations.

b. In general, a hazardous waste (contaminated with oil or hazardous materials) is a waste or combination of wastes which, because of its quantity, concentration, physical, chemical or infectious characteristics, may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or pose a substantial present or potential hazard to human health, safety, or welfare, or to the environment when improperly stored, treated, transported, or disposed of, or otherwise managed.

c. The Contractor shall immediately halt soil movement activities and notify the Owner if visual, olfactory or other evidence suggests that soils may be contaminated with oil or hazardous materials. Contractor shall provide reasonable assistance to Owner and to Owner’s representative for access to potential contamination areas for proper assessment of hazardous conditions.

d. The Owner shall contact an environmental professional (such as a Licensed Site Professional) to test any earth materials suspected of containing hazardous waste. The results shall be evaluated by the environmental professional and compared with reporting thresholds. The Owner shall inform the Contractor of the laboratory test results as soon as possible and discuss the possible soil management, disposal, recycling options available. Contaminated soils shall be managed and handled in compliance with the referenced state/federal regulations, guidelines and policies. Time and expenses associated with contaminated soils shall be negotiated between the Contractor and the Owner prior to the start of the soil management, disposal, recycling work. Owner reserves the right to negotiate and contract with other entities for remedial and, in that event, this Contractor shall make reasonable accommodations for other entities to perform this work.
e. Proper documentation of legal disposal of hazardous materials handled by this Contractor shall be provided by the Contractor to the Owner, Engineer, and review authorities.

f. Unless specifically identified as contaminated material under referenced statues and as defined above, as judged by the engineer, excavated materials shall be considered unclassified as defined in item 1. above.

B. Site General Requirements

1. Control the grading so that ground is pitched to prevent water from running to excavated areas, damaging other structures, or adjacent properties.

2. Where soil has been softened or eroded by flooding, equipment, traffic, or placement during unfavorable weather, or such other conditions, it shall be removed and replaced by the Contractor with suitable material, and at no cost to the Owner.

3. Exercise care to preserve the material below and beyond the lines of excavation. Where excavation is carried out below indicated grade or beyond the lines of excavation, Contractor shall backfill and compact the over excavation with structural fill to the indicated grade, at no additional cost to the Owner and at the direction of the Engineer.

4. Provide sheeting, shoring and bracing to complete and protect all excavated areas, as required for safety and compliance with OSHA. Costs for sheeting, shoring, and bracing shall be included as a part of the contract price for completing the work and Owner shall make no separate payment for this work.

5. Excavated materials unsuitable for reuse, surplus excavated rock and surplus excavated soil not used to fulfill requirements of the Contract, shall become the property of the Contractor and shall be removed from the site in accordance with the regulations and requirements of all municipalities or agencies having jurisdiction over the disposal sites and the route between the project and the disposal sites.

6. Limits of excavation are such that all unsuitable material will be removed to firm natural ground in the manner specified below. In building areas, unsuitable materials shall be removed to a distance of five feet (5’) beyond the building lines or within the area defined by a one horizontal to one vertical (1h:1v) line sloping down from outside bottom edge of exterior footings to firm natural ground, whichever is greater. Limits of unsuitable material excavation also apply to areas below exterior column footings. All abandoned pipes within building areas are to be removed and the excavations are to be properly backfilled.

7. Unsuitable materials are classified as organics such as peat, trash, fill, stumps, debris, material determined to be hazardous, and topsoil and subsoil when determined by Engineer to be unacceptable for incorporation into the work.
8. Under pavement areas, existing fill will be densified in place and will not be excavated. Topsoil need not be excavated from pavement areas if located more than three feet (3’) below finish pavement grades. Trees are to be cut flush with ground and stumps shall be left in place if the existing ground surface is located more than six feet (6’) below finish grades. Abandoned pipes, that are buried more than four feet (4’) from finish grade to the top of the pipe and that do not interfere with utilities to remain or to be installed, shall be capped and/or grouted at both ends and left in place. Abandoned pipes less than four feet from finish grade shall be removed and the trench appropriately backfilled with structural fill.

9. All suitable material, as determined by the Engineer, may be reused on the site, provided it meets the gradation requirements for the given materials in the information of fill sections, embankments, subgrades, backfills, etc.

10. Do not over excavate below proposed design grades for the purpose of obtaining borrow for use off-site.

C. Proof-rolling

1. Prior to placing compacted fills, the Contractor shall proof roll the natural grades to remain. Where materials of low density are indicated by rutting or weaving under the compactor, the Contractor may be required to make up to three (3) additional complete coverages of the area with the compactor as determined by the Engineer. The cost of all proof rolling shall be included in the Contract Sum. If materials of low density are encountered that cannot be compacted to the extent necessary to support the proposed embankment fills as determined by the Engineer, the Contractor shall remove those materials and replace them with compacted fill.

2. Alternately, an initial layer of fill may be allowed to form a working platform. The need, manner of construction, and thickness of such a layer shall be subject to approval of the Engineer and the layer will be permitted only where the lack of support is, as determined by the Engineer, not due to deficient ditching, grading or drainage practices, or where the embankment could be constructed in the approved manner by the use of different equipment or procedures. Thickness of up to eighteen (18) inches may be permitted for such a layer.

3.04 TRENCH EXCAVATION

A. Excavate as necessary for all drainage pipes, utilities and related structures and appurtenances, and for any other trenching necessary to complete the work.

B. Definitions:

1. Trench shall be defined as an excavation of any length where the width is less than twice the depth and where the shortest distance between payment lines does not exceed ten (10’) feet. All other excavations shall be defined as open excavations.
2. The words "invert" or "invert elevation" as used herein shall be defined as the elevation at the inside bottom surface of the pipe or channel.

3. The words "bottom of the pipe" as used herein shall be defined as the base of the pipe at its outer surface.

C. In general, machine excavation of trenches will be permitted with the exception of preparation of pipe beds which will be hand work. Excavate by hand or machine methods to at least six (6") inches below the bottom of pipe or as shown on the Drawings. Excavation to final grade shall be made in such a manner as to maintain the undisturbed bearing character of the soils exposed at the excavation level.

D. Utilities or piping shall not be laid directly on boulders, cobbles or other hard material. This material shall be removed to a minimum of six inches below the bottom of pipe at all points and backfilled or compacted as specified.

E. Remove unsuitable material encountered at subgrade elevations, backfill with material specified herein and as otherwise indicated on the Drawings, specified or directed. Compact as specified with approved compactors.

F. In general, the width of trenches shall be kept to a minimum and in the case of piping shall not exceed the sum of the pipes outside diameter plus 2'0" to at least twelve (12") inches above the pipe.

3.05 ROCK EXCAVATIONS

A. Definitions

1. Rock is defined for payment purposes as stone or hard shale in original ledge, boulders over two cubic yards (2yd³) in volume in open areas, and one cubic yard (1yd³) in volume in trenches, and masonry or concrete that cannot be broken or removed by normal job equipment (power shovels, scoops, or D-8 bulldozers with ripper attachment) without the use of explosives or drills.

2. The definition does not include materials that can be removed by means other than drilling and blasting or drilling and wedging.

B. General

1. When rock is encountered, such material shall be removed to the clearance limits set forth in these specifications.

2. Payment for rock excavation shall be made in accordance with ITEM 3.03 A.1.

3. Rock Excavation shall be performed to eliminate water pockets in the excavated rock subgrade. Contractor shall provide dewatering as required to keep the excavated rock subgrade dry until earthwork operations are complete.
C. **Blasting**

1. Contractor shall, before doing any blasting work, present to the Owner’s Representative written certificate of insurance showing evidence that his insurance includes coverage for blasting operations.

2. No blasting shall be done without giving 24 hour prior notice to the Engineer. Written permission and approval of methods must be obtained from appropriate governing authorities.

3. The Driller and Geotechnical Engineer shall log the bottom elevation of all drill holes made for blasting within the building area.

4. Experienced powdermen or persons who are licensed or otherwise authorized to use explosives shall do blasting. Accurate records shall be maintained, noting location of each blast, time of detonation, total explosive weight in each blast, maximum explosive weight per delay in each blast hole, and designation of delay cap used in each hole.

5. Explosives shall be stored, handled, and employed in accordance with state and local regulations, or, in the absence of such, in accordance with the provisions of the Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc. and in accordance with applicable OSHA regulations.

6. The amount of vibration and airblast overpressure generated by blasting shall not exceed regulatory statutes or directives established by state, local or other governing authorities. In no case shall the maximum Peak Particle Velocity (PPV) exceed the limits indicated on figure B-1, Appendix B, of the United State Bureau of Mines Report of Investigations, RI8507, 1980. These limits shall apply at all existing and under construction structures, and utilities, as well as at property and construction limits.

7. Contractor shall take great care to do no damage to existing buildings, foundations, glass and glazing, and trees to remain. Damage caused by Contractor's blasting operations shall be repaired by Contractor at no additional cost to the Owner.

D. **Cross Sectioning and Measurement**

1. When rock is encountered, it shall be uncovered and exposed, and the Engineer shall be notified in writing by the Contractor before blasting work proceeds. Quantities shall be based on measurements in their original position and to the limits of clearly defined vertical and horizontal construction lines required for the defined construction.

2. The rock shall then be measured, quantities established, and payment amounts shall be determined.
3. Excavation of material in question before agreement by the Engineer as to the character of the material, or failure to notify the Engineer, or failure to take measurements will forfeit the Contractor's right to payment for rock excavation.

4. The quantity of rock to be removed shall be based on the limits established under the Clearance Limits below.

5. Measurements shall be made by a Registered Surveyor, paid for by the Contractor and approved by the Engineer.

6. Cross section and measuring shall not be required when the payment for rock excavation is included as a part of the lump sum contract price as defined in item 3.03 A.1.

E. Clearance Limits

1. Foundations and Slabs: Within the limits of the concrete lines as defined by the working plans or by duly authorized modifications thereto, plus twelve inches (12") outside the vertical concrete lines and twelve inches (12") below base.

2. Utility Trenches: All parts of pipe, valves and fittings to a depth of six inches (6") below the bottom of the bell and for a width equal to the outside diameter of the pipe, plus fifteen inches (15") beyond the outside diameter on each side, provided that overlapping computed volumes of any ledge or boulder excavation shall be paid for only once.

3. Paved Areas: To the underside of the respective subbase for such areas.

4. Site Structures: Twelve inches (12") outside of structure all around.

5. Lawn areas and shrub planting areas: To a depth of eighteen (18) inches below finished grade.

6. Planting areas for trees over two inches in caliber size: To depth of thirty-six (36) inches below finished grade and for a radius of 3 feet around each tree, except volumes in radius areas shall not overlap.

7. Any foreseen rock or boulder encountered, as defined above, which must be removed for construction of the work defined on the plans or in modification thereto, shall be measured in its original position to the limits of clearly defined vertical construction lines and to the depth required for the defined construction.

F. Reuse of Excavated Rock

1. Riprap

Excavated rock may be used as riprap, for construction of stone masonry walls and for sloped riprap for retaining walls, provided rock is judged to be adequate quality by the Owner’s representative and it is sufficiently broken to meet gradation requirements established for the intended use.
2. Fills

Reuse of excavated rock for fill materials shall require prior approval of the Owner’s representative and shall require compliance with gradation requirements for the specific type of fill for which it is being used.

G. Rock Subgrades under Building Footings and Paved Areas

1. Excavation of rock under footings and paved areas shall include the removal of all loose material to the top of sound bedrock that is acceptable to the Owner's Representative. Sound bedrock is defined as hard, intact rock that cannot be excavated with a track mounted excavator, such as a Caterpillar 320L.

2. Rock surface for footings shall have a maximum slope of 4 horizontal to 1 vertical.

3. Rock excavations for footings carried below design grades shall be backfilled by placement of concrete with same strength as footing at the Contractors cost. At the discretion of the structural engineer, footings could be dropped below design elevation onto competent rock.

H. Rock Subgrades. Outside Building Area

1. Rock subgrades outside building area shall be prepared as follows:
   a. Loose rock is covered with 12 to 18 inches of crushed stone or choke stone; and
   b. Prior to placing crushed or choked stone, the area is rolled with at least four passes of a heavy vibratory roller, RayGo 600 or equal.

3.06 PREPARATION OF EXCAVATION BOTTOMS

A. General Site Areas

1. Rock surfaces to receive backfill shall have a maximum slope of four (4) horizontal to one (1) vertical.

2. Rock excavations carried below design grade and clearances shall be backfilled with lean concrete with a minimum compressive strength of 1500 psi.

B. Building and Pavement Areas

1. Loose rock is covered with 6 inches of crushed stone or choke stone; and

2. Prior to placing crushed or choked stone, the area is rolled with at least four passes of a heavy vibratory roller, RayGo 600 or equal.
3. Proofroll subgrade with a vibratory roller or by minimum of two passes of a fully loaded ten-wheeled dump truck. Soft or hard areas and other objectionable material (stumps, wood, organics) shall be excavated and backfilled with compacted structural fill.

4. Prior to the placement of blast rock fill over a bedrock subgrade, voids in the rock surface shall be choked off with appropriately graded crushed stone or Compacted Structural Fill placed on filter fabric to prevent migration of fines into fractures, as directed by the Owner’s Representative.

C. Subgrades under proposed landscape areas.

1. Depth to rock under planting areas shall be a minimum of 48 inches below subgrade elevations. Backfill to subgrade shall be with topsoil/loam materials.

2. In lawn areas, scarify subsoil a minimum depth of six inches. Subsoil shall also be cleared of debris and stones larger than four inches prior to topsoil spreading.

3. In planting areas, scarify subsoil a minimum depth of six inches below the required root ball excavation prior to placement of plant backfill mixture.

D. Trenches

1. Compaction equipment used in open areas where space permits shall consist of vibratory rollers weighing at least 15,000 pounds, fully loaded ten-wheel dump trucks, pneumatic compactors or other similar equipment.

2. Compaction equipment for fill against foundation walls and in other confined areas shall be accomplished by means of drum-type, power-driven, hand-guided vibratory compactors operating at 2,000 cycles per minute, or by hand-guided vibratory plate tampers.

3.07 BACKFILLING AND PLACEMENT OF FILL MATERIALS

A. Site

1. Dewater subgrade areas prior to filling.

2. Compaction by puddling or jetting is prohibited.

3. Control groundwater and surface runoff to minimize disturbance of exposed natural ground surface, previously placed and compacted fill and material being placed.

4. Soil fill moisture shall be maintained at an acceptable working range to allow for proper compaction.

5. Do not place fill on frozen ground.
6. Do not place frozen fill.

7. Place fill in uniform horizontal layers and compact immediately after placement. Where the horizontal layer meets a rising slope, the layer shall be keyed into the slope by cutting a bench during spreading of preceding lift.

8. To the extent that is practical, each layer of fill shall be compacted to the specific density the same day it is placed.

9. Slope fill surfaces at the end of each day to provide for free surface drainage.

10. Protect structures and pipes from damage during backfilling operations. Repair damage at no cost to owner.

11. Placement of fill shall not begin prior to observation and approval of subgrade conditions by Engineer.

12. Protect foundations, footings, and waterproofing during backfilling. Repair damage at no cost to Owner.

13. Prior to backfilling between foundation wall and sheeting, remove unsuitable material, including rubbish, organic materials or other debris. Do not commence filling operations until conditions have been observed by Engineer.

14. Backfill shall not be placed against walls until they are braced or have cured sufficiently to develop strength necessary to withstand, without damage, pressure from backfilling and compacting operations.

15. Provide shoring, sheeting, and bracing of excavations as required to assure complete safety against collapse of the earth at the site of excavations. Alternatively, lay back excavations to suitable slope.

16. Upon completion of the work, the final ground surface shall be left in a firm, unyielding, true, uniform condition free from ruts. Repair disturbed areas caused by equipment traffic at no cost to Owners.

B. Equipment

1. Compaction equipment used in open areas where space permits shall consist of vibratory rollers weighting at least 15,000 pounds, fully loaded ten-wheel dump trucks, pneumatic compactors of other similar equipment.

2. Compaction equipment for fill against foundation walls and in other confined areas shall be accomplished by means of drum-type, power-driven, hand-guided vibratory compactors operating at 2,000 cycles per minute, or by hand-guided vibratory plate tampers.
C. Placing Fill

1. Fill sections and embankments shall be constructed of earth, rock or a mixture of earth and rock deposited in successive lifts. Except as hereinafter permitted, the loose thickness of each lift shall not be more than twelve (12) inches before compaction.

2. Rock fill may be used in deep fill areas, placed to the levels and under the conditions described in Section 2.01 K.

3. No rock in excess of six (6) inches in its largest dimension shall be incorporated in the top two (2) foot layer of embankment immediately below the subgrade.

4. During fill and embankment construction operations, earth moving equipment shall be routed as evenly as possible over the entire width of the work.

5. At the close of each day’s work the working surface shall be crowned, shaped, and rolled with smooth steel or pneumatic tired rollers to ensure proper drainage.

6. Prior to placing compacted Structural Fill below the slab, the surface of natural ground, shall be proof-rolled with at least four passes of a heavy vibratory drum roller, such as a RayGo 600 or equal. Hard and soft spots shall be excavated and replaced with Structural Fill or other material acceptable to the Owner’s Representative.

7. Where excavations for slab-on-grade extend to weathered fractured, or blasted bedrock, the Owner’s Representative shall assess the rock surface for the presence of voids and may require placement of a 2 to 18 inch layer of choke stone or crushed stone prior to placement of structural fill.

D. Fills under Parking Areas

1. Paved area subgrades shall be excavated to a minimum of 12 inches beneath required subgrade elevation or existing grade, whichever is lower.

2. Proofroll subgrade with a vibratory roller or by minimum of two passes of a fully loaded ten-wheeled dump truck. Soft or hard areas and other objectionable material (stumps, wood, organics) shall be excavated and backfilled with compacted common fill.

3. Where excavations for pavements extend to weathered, fractured, or blasted bedrock, prepare surface as indicated in Section 3.05 B for building and pavement areas.

4. A minimum of 12 inches of gravel base course shall be provided between subgrade and the bottom of the bituminous surface.
E. Subgrades Under Proposed Landscape Areas

1. Fills under tree and shrub planting areas shall be back filled with topsoil/loam materials.

3.08 TRENCH BACKFILLING

A. General

1. Trenches shall be backfilled as soon as practicable with suitable approved materials. All trench backfilling shall be done with special care, in the following manner and as the Engineer may direct from time to time.

2. Backfill material for pipe bedding shall be deposited in the trench, uniformly on both sides of the pipe, for the entire width of the trench to the springline of the pipe. The backfill material shall be placed by hand shovels, in layers not more than 6 inches thick in loose depth, and each layer shall be thoroughly and evenly compacted by tamping on each side of the pipe to provide uniform support around the pipe.

3. Trench backfilling shall be placed so as not to disturb the previously installed pipes, utilities, concrete, and other work within and near the trench. The moisture content of the backfill material shall be such that proper compaction will be obtained. Backfill of trenches within areas of pavement construction shall be made in controlled compacted lifts extending to grades required to establish the proper pavement base courses.

4. In backfilling trenches, each layer of backfill material shall be adequately compacted in such a manner as to provide the required bearing value, so that paving can proceed immediately after backfilling is completed.

5. Any trenches or excavations improperly backfilled, or where settlement occurs, shall be reopened to the depth required for proper compaction, then refilled and compacted with the surface restored to the required grade and condition, at no additional expense to the Owner.

6. During filling and backfilling operations, pipelines will be checked to determine whether any displacement of the pipe has occurred. If the inspection of the pipelines shows poor alignment, displacement of pipe, or any other defects, the condition shall be remedied by removal, realignment, and backfill of the pipe, in a manner satisfactory to the Engineer at no additional cost to the Owner.

B. Embedment

The type of materials to be used in bedding and backfilling shall conform to the details shown on the Drawings and the following:
1. **Embedment materials** are those used for bedding, haunching and initial backfill. ASTM D-2321 classifies the soils. Unified soil classification. The following will describe the soils:

   a. **Class I** -- Angular crushed stone or rock, dense or open graded with little or no fines (3/4 inch stone size) (to be used in wet conditions or where shown on the Drawings)

   b. **Class II** - Clean, coarse grained gravel, with a maximum stone size of the 1-1/2 inches

   c. Embedment materials shall be free from lumps of frozen soil or ice when placed. Embedment materials shall be placed and compacted at optimum moisture content.

2. **Foundation:** A stable utility foundation of Class I or II material must be provided to insure proper line and grade is maintained. Unsuitable foundations such as organics, soft clay, and other soft materials must be removed and the material stabilized. Unsuitable or unstable foundation materials shall be undercut and replaced with a suitable bedding material of Class I or Class II (see 3.08 B5), placed in 6" lifts. The Engineer may approve other methods of stabilization, such as geotextiles.

3. **Bedding:** Provide a stable and uniform bedding for the pipe and any protruding features of its joints and/or fittings. The bedding for the middle 1/3 of the pipe outside diameter should be loosely placed so that the pipe conforms to the trench. The remainder of the bedding at the base of the trench shall be compacted to a minimum of 95 percent modified proctor density as determined by ASTM Test method D1557. Class I, or II materials are suitable for use as bedding.

4. **Haunching:** Proper haunching provides a major portion of the pipe's strength and stability. Care must be exercised to insure placement and compaction of the embedment material in the haunches. For larger diameter pipes (> 30"), embedment materials should be worked under the haunches by hand. Haunching materials may be Class I, or II and must be placed and compacted in 6-inch maximum lifts, compacted to 95 percent modified proctor density.

5. **Initial Backfill:** Initial backfill materials are required for a minimum of 3/4 of the pipe diameter. The initial backfill shall be from the springline to 24 inches above the pipe to provide protection for the pipe from construction operations during placement of the final backfill and protect the pipe from stones or cobbles in the final backfill.

   a. Class I materials must be used in wet trenches and Class I bedding and haunching materials shall be used.

   b. Class II materials shall be used unless noted otherwise or wet conditions are encountered. The material shall be compacted in 6 inch lifts to 95 percent modified proctor density (ASTM D1557).
c. Flooding or jetting as a procedure for compaction are not allowed.

6. Controlled Low Strength Materials (CLSM) or Controlled Density Fill (flowable fills) are acceptable backfill materials. Several considerations should be accounted for when using CLSM/CDF backfill. Provisions to prevent floatation of the pipe during placement of the CLSM/CDF must be used. This can include anchoring the pipe by placing flowable fill at the each joint and allowing the fill to partially cure prior to placing the flowable fill along the entire length of the pipe. Also, mechanical anchors such as bent rebar driven into competent soil or precast weights, may be used at each joint to prevent floatation. When using CLSM/CDF, the fill should always be placed to completely encase the pipe.

7. Backfill. Backfill from one foot (two feet for HDPE pipe) above the top of the pipe to subgrade elevations shall be structural fill material. Generally, the excavated trench material may be used as this backfill. This backfill shall be placed in 12-inch maximum lifts and compacted to a minimum of 92 percent modified proctor density to prevent excessive settlement at the surface.

8. Vehicular and Construction Loads: Pipe installation shall be suitable to carry H-25 live loads (40,000 lbs. Axle - legal load) with 24 inches of cover.

3.09 BACKFILLING AGAINST STRUCTURES

A. Backfilling against masonry or concrete shall only be done when approved. The Contractor shall not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking or other damage. As soon as practicable after the structures are structurally adequate and other necessary work has been satisfactorily completed, any leakage tests or other testing of the structures shall be made by the Contractor, as required by the Engineer, at the Contractor's expense.

After the satisfactory completion of leakage tests and the satisfactory completion of any other required work in connection with the structures, the backfilling around the structures shall proceed using suitable and approved excavation material. The best of the backfill material shall be used for backfilling within 2 feet of the structure. Just prior to placing backfill, the areas shall be cleaned of all excess construction material and debris and the bottom of excavations shall be in a thoroughly compacted condition.

B. Symmetrical backfill loading shall be maintained. Special care shall be taken to prevent any wedging action or eccentric loading upon or against the structures.

During backfilling operations, care shall be exercised that the equipment used will not overload the structures in passing over and compacting these fills. Except as otherwise specified or directed, backfill shall be placed in layers not more than 12 inches in loose depth and each layer of backfill shall be compacted thoroughly and
evenly using approved types of mechanical equipment. Each pass of the equipment shall cover the entire area of each layer of backfill.

C. In compacting and other operations, the Contractor shall conduct his operations in a manner to prevent damage to structures due to passage of heavy equipment over and adjacent to structures. Repair damage made by the Contractor, at no additional expense to the Owner.

D. After backfilling the Contractor shall maintain the surfaces of backfill areas in good condition so as to present a smooth surface at all times level with adjacent surfaces. The Contractor shall repair any subsequent settling over backfilled areas immediately, in a manner satisfactory to the Engineer, and such maintenance shall be provided by the Contractor for the life of this Contract, at no additional expense to the Owner.

E. The finished subgrade of the filled excavations upon which pavements are to be constructed shall not be disturbed by traffic of other operations and shall be maintained in a satisfactory condition until the finished courses are placed. The storage or stockpiling of materials on finished subgrade will not be permitted.

F. Uniformly smooth grading of all areas to be graded, as indicated including excavated sections and all areas disturbed as a result of the Contractor's operations, shall be accomplished. The finished surfaces shall be reasonably smooth, compacted and free from surface irregularities.

3.10 COMPACTION

A. Compaction Requirements

1. The degree of compaction is expressed as a percentage of the maximum dry density at optimum moisture content as determined by ASTM Test D1557, Method C. The compaction requirements are as follows:

<table>
<thead>
<tr>
<th>Area</th>
<th>Minimum Degree of Compaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below footings</td>
<td>95%</td>
</tr>
<tr>
<td>Below slabs</td>
<td>95%</td>
</tr>
<tr>
<td>Detention basin berms</td>
<td>95%</td>
</tr>
<tr>
<td>Pavement base course</td>
<td>95%</td>
</tr>
<tr>
<td>Pavement subbase</td>
<td>95%</td>
</tr>
<tr>
<td>General fill below pavement subbase</td>
<td>90%</td>
</tr>
<tr>
<td>Trench backfill</td>
<td>92%</td>
</tr>
<tr>
<td>Lawn areas</td>
<td>90%</td>
</tr>
</tbody>
</table>

2. Compaction percentages are based on the laboratory derived Maximum Density Values.
B. **Moisture Control**

1. Fill that is too wet for proper compaction shall be harrowed, or otherwise dried to a proper moisture content to allow compaction to the required density. If fill cannot be dried within 24 hours of placement, it shall be removed and replaced with drier fill.

2. Fill that is too dry for proper compaction shall receive water uniformly applied over the surface of the loose layer. Sufficient water shall be added to allow compaction to the required density.

3. In no case shall fill be placed over material that is frozen. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, fill operations shall not be resumed until the moisture content and the density of the previously placed fill are as specified.

C. **Lift Thickness of Material**

1. Structural Fill and Sand Borrow. Place in layers not to exceed 9 inches in thickness when utilizing heavy compaction equipment, and 6 inches when utilizing light hand-operated compaction equipment.

2. Common Fill. Place in layers not to exceed 12 inches in thickness when utilizing heavy compaction equipment, and 8 inches when utilizing light hand-operated compaction equipment.

3. Crushed Stone, Gravel, Dense, Graded Crushed Stone for Subbase. Place in layers not to exceed 9 inches in thickness when utilizing heavy compaction equipment, and 6 inches when utilizing light hand-operated compacted equipment. Compact with a minimum of 4 coverages of acceptable compaction equipment.

D. **Placing Fill**

1. Fill sections and embankments shall be constructed of earth, rock, or a mixture of earth and rock deposited in successive lifts. Except as hereinafter permitted, the loose thickness of each lift shall not be more than twelve (12) inches before compaction.

2. Rock fill may be used in deep fill areas.

3. No rock in excess of six (6) inches in its largest dimension shall be incorporated in the top two (2) foot layer of embankment immediately below the subgrade.

4. During fill and embankment construction operations, earth moving equipment shall be routed as evenly as possible over the entire width of the work.

5. At the close of each day's work the working surface shall be crowned, shaped, and rolled with smooth steel or pneumatic tired rollers to ensure proper drainage.
E. Protection of Fill

1. Protection of compacted fill shall be the responsibility of the Contractor. Newly graded areas shall be protected from the actions of the elements and traffic. Any settlement or washing that occurs prior to acceptance of the work shall be repaired and grades shall be established to the required elevations and slopes. Damage to any compacted lift (including those lifts previously tested and approved by the Engineer) occurring at any time during the course of construction, which is caused by equipment, moisture entering the embankment, or from any other cause, shall be fully repaired by the Contractor prior to placement of overlying materials, at no additional cost to Owner and to the complete satisfaction of the Engineer.

2. In the event of and prior to the commencement of heavy rains, the Contractor shall suspend fill operations immediately and shall take all necessary steps to keep the site as well drained as possible. Fill operations shall not be resumed until the moisture content of the fill is such as to permit compliance with the Specifications.

3. All corrective work or operations necessary to maintain proper moisture control of the fill material shall be at the expense of the Contractor.

F. Grading Tolerances

1. Grading shall be completed to meet or exceed the following tolerances of uniformity*:

<table>
<thead>
<tr>
<th>Location</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Subgrade Beneath Structures</td>
<td>1/2 inch</td>
</tr>
<tr>
<td>Top of Subgrade Beneath Paving</td>
<td>1/2 inch</td>
</tr>
<tr>
<td>Top of Subgrade Beneath Landscape Areas</td>
<td>1 inches</td>
</tr>
<tr>
<td>Top of Gravel and Gravel Bases</td>
<td>1/4 inch</td>
</tr>
</tbody>
</table>

*Uniformity is defined as no variations in the surface materials, at the grades and slopes indicated on the drawings that exceed the listed tolerance over a length of ten (10) feet horizontally in any direction.

2. The bottom of earth and rock excavations shall be formed to provide a smooth, uniform slope and grade. The bottom of the excavated grade shall be free of pockets, depressions or ridges that would collect or concentrate water, silts or other such objectionable material prior to the Application of Backfill or other Finish Materials.

G. Finish

Upon completion of the work, ground surface shall be left in a firm, unyielding, true, uniform condition, free of ruts.
3.11 SHEETING AND BRACING

A. General

1. Whenever sheeting and bracing will be required, it shall be furnished and installed by the Contractor in accordance with the recommendations of Structural and Geotechnical Engineers engaged by the Contractor.

2. The Contractor shall engage licensed professional Structural and Geotechnical Engineers. These Engineers shall be licensed in the state where the work is occurring and they shall prepare designs for the sheeting and bracing.

3. Submit the sheeting and bracing designs to the Owner and the Engineer for the project record. The sheeting and bracing plans and calculations shall bear the professional seals and signatures of the Contractor’s Engineers. These plans and calculations shall be submitted prior to the start of work.

4. The Contractor shall furnish and install the required sheeting and bracing in accord with the submitted designs. The Contractor shall include the costs for this work in his bid price for the project. No additional or separate compensation shall be allowed.

END OF SECTION 02300
SECTION 02600
STORM DRAINAGE SYSTEM

PART 1—GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for furnishing and installing the site storm drainage system.
B. The work includes:
   1. Site storm drainage system.
   2. Subdrains, headwalls, flared end sections and underground stormwater detention facilities.

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this Section include:
   1. Section 02240—DEWATERING AND CONSTRUCTION SURFACE WATER
   2. Section 02300—EARTHWORK
   3. Section 03301—SITE CAST-IN-PLACE CONCRETE

1.03 SUBMITTALS

A. Shop Drawings
   1. Materials list of items proposed for the work.
   2. Shop drawings or descriptive literature, or both, showing dimensions, joint and other details of all materials proposed for the work. Shop drawings shall be submitted to the Engineer for approval prior to ordering material.

B. As-Built Drawings
   1. Submit 1 copies of As-Built Drawings upon completion and acceptance of work.
   2. As-Built Drawings shall be complete and shall indicate the true measurement and location, horizontal and vertical, of all new drainage system construction. As-Built drawings shall include a minimum of three ties showing the distance to each catch basin and manhole from fixed permanent objects.

1.04 COORDINATION AND VERIFICATION

A. Coordinate the work with the termination of storm drain connections at buildings, connections to municipal systems, and trenching operations.
B. The contractor shall field verify and survey the size, location and elevations of all existing pipe and utility lines prior to ordering of materials for this utility system. A report of the findings of the verification survey shall be submitted to the engineer for information and comment.

1.05 DELIVERY, STORAGE AND HANDLING

A. All materials shall be adequately protected from damage during transit. Pipes shall not be dropped.

B. All pipe and other appurtenances shall be inspected before placement in the work and any found to be defective from any cause, including damage caused by handling, and determined by the Engineer to be unrepairable, shall be replaced at no cost to the Owner.

C. Storage and handling of pipes, manholes, catchbasins, oil-grit separators, treatment units and other system appurtenances shall be in accordance with the manufacturer’s recommendations.

1.06 INSPECTION

A. The manufacturer/supplier is responsible for the provision of all test requirements specified for each type of pipe. In addition, any pipe may be inspected at the plant for compliance with these specifications by an independent testing laboratory selected and paid by the Owner. The Contractor shall require the manufacturer’s cooperation in these inspections.

B. Inspection of the pipe may also be made after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the specification requirements, even though pipe samples may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall be removed from the site at once.

PART 2—PRODUCTS

2.01 GENERAL

A. All materials for storm drainage system shall be new and unused.

B. All material shall conform to the latest MDC regulations.

2.02 PIPE

A. Slotted Corrugated Plastic Pipe for Subdrain: Materials, dimensions, physical properties and fabrication of pipe or tubing, couplings and fittings shall be in conformance with AASHTO-M252.
Piping and fittings (3 to 6 inches in diameter) shall conform to ASTM F-405.

Piping and fittings over 6 inches in diameter shall conform to ASTM F-667.

B. Filter Fabric for Underdrains shall be Mirafi 140N,

C. Polyvinyl Chloride (PVC) Pipe: Pipe and fittings shall comply with the requirements of ASTM D3034, rated SDR 35. Pipe shall be continually marked with manufacturer's name, pipe size, cell classification, SDR rating, and ASTM D3034 classification.

2.03 STORM DRAIN MANHOLES

A. Precast Units

1. Structure: 48-inch minimum inside diameter, precast concrete units (4,000 psi minimum compressive strength) with eccentric cone section tapering to 24-inch diameter and monolithic base section meeting the requirements of ASTM C478. All structures shall be designed for HS-20 loading, and shall be sized to accept pipe penetrations as shown on the drawings.

2. Precast Unit Joint Seals: Butyl rubber O-ring type seals meeting the requirements of ASTM C990.

3. Openings for pipe and materials to be embedded in the walls of the manholes sections for joint seals shall be cast in the sections at the required locations during manufacture. Sections with incorrectly cast and patched pipe openings will be rejected.

4. Openings shall be cast into the manhole sections to receive entering pipes during manufacture. The openings shall be sized to provide a uniform 2 inch maximum annular space between the outside of the pipe wall and the opening in the riser. After the pipe is in position, the annular space shall be solidly filled with nonshrink mortar. Care shall be taken to assure that the openings are located to permit setting of the entering pipe at its correct elevation.

B. Masonry Units

1. Brick shall conform to Sewer Brick (Made from Clay or Shale), ASTM designation C32, Grade MS or Building Brick (Solid Masonry Units Made from Clay or Shale), ASTM C62, Grade SW.

2. Concrete block shall be solid block and shall conform to the Specifications for Concrete Masonry Units for Construction of Catch Basins and Manholes, ASTM designation C139.
3. Mortar shall be in conformance with ASTM C270, Type M. The mortar shall be composed of Portland cement hydrated lime, and sand, in the proportions of 1 part cement to 1/4 part hydrated lime to 3-1/2 parts sand by volume.

4. Cement shall be Type I or II Portland cement conforming to ASTM C150, Standard Specification for Portland Cement. Where masonry is exposed to salt water, Type II shall be used.

5. Hydrated lime shall be Type S conforming to ASTM D207.

6. Sand for masonry mortar shall conform to the gradation requirements of ASTM C144.

C. Steps for manholes shall be Steel Reinforced Copolymer Polypropylene plastic step with at least a 14-inch wide stepping surface conforming to ASTM C478 and A615.

D. Manhole Frame and Cover: Grey iron casting conforming to ASTM A48, heavy duty, with words "STORM DRAIN" embossed on cover. Letter size shall be three inches. All manhole frame and covers shall conform to the latest MDC regulations.

2.04 SILT SACKS/SEDIMENT CONTROL DEVICES

A. Install at locations shown on the drawings.

B. Manufacturer: ACF Environmental, Inc. or approved equal.

C. Material to be a polypropylene geotextile fabric with strength per ASTM D4884.

PART 3—EXECUTION

3.01 GENERAL

A. Contractor to verify the location, size invert and type of existing pipes at all points of connection prior to ordering new utility materials.

B. All pipe shall be laid accurately to the lines and grades shown on the drawings and in conformance with the pipe manufacturer’s recommendations.

C. As soon as the trench is excavated to the normal grade of the bottom of the trench, the Contractor shall immediately place the bedding material in the trench. The pipe shall be firmly bedded in the compacted bedding material accurately to the lines and grades shown on the Drawings.

D. Laying Pipe: Each length of pipe shall be laid with firm, full and even bearing throughout its entire length, in a prepared trench. Pipe shall be laid with bells upgrade unless otherwise approved by the Engineer.
Every length of pipe shall be inspected and cleaned of all dirt and debris before being laid. The interior of the pipe and the jointing seal shall be free from sand, dirt and trash. Extreme care shall be taken to keep the bells of the pipe free from dirt and rocks so that joints may be properly lubricated and assembled. No pipe shall be trimmed or chipped to fit.

No length of pipe shall be laid until the proceeding lengths of pipe have been thoroughly embedded in place, to prevent movement or disturbance of the pipe alignment.

E. Notch under pipe bells and joints where required to provide for uniform bearing under entire length of pipe.

F. Excavation, backfilling and compaction shall be as specified in Section 02300.

G. Maintain optimum moisture content of bedding material to attain required compaction density.

H. Pipe Extension: Where an existing pipe is to be extended, the same type of pipe shall be used, unless otherwise approved by the Engineer.

I. Full Lengths of Pipe: Only full lengths of pipe shall be used in the installation except that partial lengths of pipe may be used at the entrance to structures, and to accommodate the required locations of service connection fittings.

J. Pipe Entrances to Structures: All pipe entering structures shall be cut flush with the inside face of the structure, and the cut ends of the pipe surface within the structure shall be properly rounded and finished so that there will be no protrusion, ragged edges or imperfections that will impede or affect the hydraulic characteristics of the stormwater flow. The method of cutting and finishing shall be subject to the approval of the Engineer.

K. Protection During Construction: The Contractor shall protect the installation at all times during construction, and movement of construction equipment, vehicles and loads over and adjacent to any pipe shall be performed at the Contractor’s risk.

At all times when pipe laying is not in progress, all open ends of pipes shall be closed by approved temporary watertight plugs. If water is in the trench when work is resumed, the plug shall not be removed until the trench has been dewatered and all danger of water entering the pipe eliminated.

3.02 EXCAVATION AND BACKFILLING FOR PIPES

The type of materials to be used in bedding and backfilling and the method of placement shall conform to the requirements of Section 02300, EARTHWORK, the details shown on the Drawings and the following.
A. Embedment materials are those used for bedding, haunching and initial backfill around pipes as illustrated on the drawings.

All embedment materials should be free from lumps of frozen soil or ice when placed. Embedment materials should be placed and compacted at optimum moisture content

B. Trench Bedding: Material must be provided to insure proper line and grade is maintained. Unsuitable or unstable materials shall be undercut and replaced with a suitable bedding material, placed in 6” lifts. Other methods of stabilization, such as geotextiles may be appropriate and their use must be approved by Owner’s Representative.

Provide a stable and uniform bedding for the pipe and any protruding features of its joints and/or fittings. The middle of the bedding equal to 1/3 of the pipe outside diameter should be loosely placed, with the remainder compacted to a minimum of 95 percent standard proctor density.

C. Haunching: Proper haunching provides a major portion of the pipe’s strength and stability. Exercise care to insure placement and compaction of the embedment material in the haunches. For larger diameter pipes (>30”), embedment materials should be worked under the haunches by hand. Haunching materials shall be placed and compacted in 6 inch maximum lifts, compacted to 95 percent modified proctor density.

D. Initial Backfill: The initial backfill shall be from the springline to 24 inches above the pipe to provide protection for the pipe from construction operations during placement of the final backfill and protect the pipe from stones or cobbles in the final backfill. Compact initial backfill per Section 02300.

Flooding or jetting as a procedure for compaction are not allowed.

E. Final Backfill: The final backfill should be the same material as the proposed embankment or surface finishes. Generally, the excavated material may be used as final backfill. Placement should be as specified for the embankment. In lieu of a specification, the final backfill should be placed in 12 inch maximum lifts and compacted to a minimum 95 percent modified proctor density to prevent excessive settlement at the surface. Compaction should be performed at optimum moisture content.

F. Vehicular and Construction Loads: During construction, avoid heavy equipment loads (> 40,000 lbs. per axle over the pipe. Additional temporary cover should be placed over the pipe for heavy construction load crossings. Hydrohammers or hoe-pak compactors may not be used over the pipe until at least 48 inches of cover have been provided.

3.03 MANHOLES, CATCH BASINS, AND DROP INLETS-PRECAST

A. Manholes Catch Basins and Drop Inlets shall be constructed at the locations and to the lines, grades, dimensions and design shown on Drawings or as required by the Engineer.
B. Precast concrete Units shall be installed in a manner that ensures watertight construction and all leaks in precast concrete structures shall be sealed. If required, precast concrete structures shall be repaired or replaced to obtain watertight construction.

C. Stubs shall be short pieces of pipe cut from the bell ends of the pipe. Stubs shall be plugged with brick masonry unless otherwise directed by the Engineer.

D. Manhole Inverts shall conform accurately to the size of the adjoining pipes.
   1. Manhole inverts shall be constructed of 3,500 psi concrete as shown the Drawings.
   2. Inverts shall be laid out in smooth diameter curves of the longest possible radius to provide uniform flow channels.
   3. Invert shelves shall be graded with a 1-inch drop per 1-foot length sloped from the manhole walls.

E. Manhole steps shall be accurately positioned and embedded in the concrete when the section is cast. Precast-reinforced concrete manhole sections shall be set vertical and with sections and steps in true alignment.

F. All holes in sections used for their handling shall be thoroughly plugged with rubber plugs made specifically for this purpose or with mortar. The mortar shall be one part cement to 1-1/2 parts sand, mixed slightly damp to the touch, hammered into the holes until it is dense and an excess of paste appears on the surface, and finished smooth and flush with the adjoining surfaces.

G. Precast sections shall be level and plumb with approved joint seals. Water shall not be permitted to rise over newly made joints until after inspection and acceptance. All joints shall be watertight.

H. Openings which have to be cut in the sections in the field shall be carefully made to prevent damage to the riser. Damaged risers will be rejected and shall be replaced at no additional cost to the Owner.

3.04 BRICK MASONRY

A. Brick masonry structures shall be watertight. All leaks in brick masonry structures shall be sealed. All brick masonry shall be laid by skilled workmen.

B. All beds on which masonry is to be laid shall be cleaned and wetted properly. Brick shall be wetted as required to be damp, but free of any surface water when placed in the work. Bed joints shall be formed of a thick layer of mortar which shall be smoothed or furrowed slightly. Head joints shall be formed by applying a full coat of mortar on the entire brick end, or on the entire side, and then shoving the mortar covered end or side of the brick tightly against the bricks laid previously. The practice of buttering at the
corners of the brick and then throwing the mortar or crappings in the empty joints will not be permitted. Dry or butt joints will not be permitted. Joints shall be uniform in thickness and approximately 1/4 inch thick.

C. Brickwork shall be constructed accurately to the required structure dimensions and tapered at the top to the dimensions of the flanges of the cast-iron frames, as shown on the Drawings.

D. Joints on the inside face of walls shall be tooled slightly concave with an approved jointer when the mortar is thumbprint hard. The mortar shall be compressed with complete contact along the edges to seal the surface of the joints.

E. All castings to be embedded in the brickwork shall be accurately set and built-in as the work progresses.

F. Water shall not be allowed to flow against brickwork or to rise on the masonry for 60 hours after it has been laid, and any brick masonry damaged in this manner shall be replaced as directed at no additional cost to the Owner. Adequate precautions shall be taken in freezing weather to protect the masonry from damage by frost.

3.05 CONCRETE MASONRY UNITS

A. Concrete masonry units shall be soaked in water before laying. As circular concrete block walls are laid-up, the horizontal joints and keyways shall be flushed full with mortar. As rectangular blocks are laid-up, all horizontal and vertical joints shall be flushed full with mortar. Plastering of the outside of block structures will not be required. No structure shall be backfilled until all mortar has completely set.

3.06 MANHOLE STEPS

A. Steps shall be cast into the precast walls during manufacture.

B. Steps in brick masonry and concrete units shall be installed as the masonry courses are laid.

C. Steps shall be ½” grade 60 steel reinforcement coated in copolymer polypropylene plastic or as directed by the Owner.

3.07 CASTINGS

A. Cast-iron frames for grates and covers shall be well bedded in cement mortar and accurately set to the proposed grades.

B. All voids between the bottom flange and the structure shall be completely filled to make a watertight fit. A ring of mortar, at least one-inch thick and pitched to shed water away from the frame shall be placed over and around the outside of the bottom flange. The mortar shall extend to the outer edge of the masonry all around its circumference and shall be finished smooth. No visible leakage will be permitted.
C. Structures within the limits of bituminous concrete pavement shall be temporarily set at the elevation of the bottom of the binder course. After the binder course has been compacted, the structures shall be set at their final grade. Backfill necessary around such structures after the binder course has been completed shall be made with 3,500 psi concrete.

3.08 CONNECTIONS TO EXISTING FACILITIES

A. General Requirements: The contractor shall make all required connections of the proposed drainage system into existing drainage system, where and as shown on the Drawings.

B. Compliance with Requirements of Owner of Facility: Connections into existing drainage system facilities shall be performed in accordance with the requirements of the Owner of the facility. The Contractor shall comply with all such requirements, including securing of all required permits, and paying the costs thereof.

3.09 MANHOLE CONNECTIONS

A. Manhole pipe connections for precast manhole bases may be accomplished by any method described below. The Contractor shall make sure that the outside diameter of the pipe is compatible with the particular pipe connection used.

1. A tapered hole filled with non-shrink waterproof grout after the pipe is inserted. This connection method will not be allowed when connecting PVC pipe to manholes.

2. The LOCK JOINT Flexible Manhole Sleeve cast in the wall of the manhole base. The stainless steel strap and exposed sleeve shall be protected from corrosion with a bitumastic coating.

3.10 CLEANING, TESTING AND REPAIR

A. The Contractor shall clean the entire drainage system of all debris and obstructions. This shall include, removal of all formwork from structures, concrete and mortar droppings, construction debris and dirt. The system shall be thoroughly flushed clean and the Contractor shall furnish all necessary hose, pumps, pipe and other equipment that may be required for this purpose. No debris shall be flushed into existing drains, storm recharge chambers, storm drains and/or streams.

B. Testing and Correction of Defective Work: If a mandrel 3 feet long and 90 percent of the pipe diameter cannot be pulled through the completed pipe runs after 7 days of completed trench backfill, the pipe line shall be deemed unacceptable and the pipe lines shall be removed and replaced. The Contractor shall make the necessary repairs or replacements required to permanently provide an open and structurally sound drainage system capable of supporting the anticipated loading from all sources throughout the year.
3.11 FINAL INSPECTION

A. Upon completion of the work, and before final acceptance by the Engineer, the entire drainage system shall be subjected to a final inspection in the presence of the Engineer. The work shall not be considered as complete until all requirements for line, grade, cleanliness, mandrel tests and other requirements have been met.

END OF SECTION 02600
SECTION 02743
BITUMINOUS CONCRETE WALKWAYS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 1, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.

B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install the bituminous concrete pavement, as indicated on the Drawings and as specified herein.

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1. Division 2 Section, SITE PREPARATION AND DEMOLITION
2. Division 2 Section, EARTHWORK

1.04 REFERENCES

A. The following standards shall apply to the work of this Section.

1. American Association of State Highway and Transportation Officials (AASHTO):
   M 20 Penetration Graded Asphalt Cement
   M 82 Cut-Back Asphalt (Medium Curing Type)
   M 140 Emulsified Asphalt

1.05 SAMPLES AND SUBMITTALS

A. At least 30 days prior to intended use, the Contractor shall provide job mix formula for all bituminous concrete specified in this Section, listing quantities and pertinent ingredient properties for review and approval by the Owner’s Representative. Do not order materials until Owner’s Representative's approval of mix formula has been obtained. Delivered materials shall closely match the approved samples.

1.06 QUALITY ASSURANCE

A. Unless otherwise specified, work and materials for construction of the bituminous concrete pavement shall conform to the applicable portions of the following:

1. ConnDOT Specifications Section 3.04 for base and Section 4.06 for pavement.

B. Paving work, base course installation, top coarse installation and the like, shall be done only after excavation and construction work which might damage them has been completed. Damage caused during construction shall be repaired before acceptance.

C. Existing pavement under state or local jurisdiction shall, if damaged during the course of this project, be repaired or replaced as specified, performed and paid for under this Division 2 Section, BITUMINOUS CONCRETE WALKWAYS, of the Specification. Materials and construction shall match local or state paving standards and cross sections, which ever is most stringent.

1.07 TESTING AND INSPECTION

A. The Contractor shall retain an independent testing laboratory to perform inspection and testing of paving and associated work in accordance with Division 1 Section, QUALITY CONTROL.
PART 2 PRODUCTS

2.01 AGGREGATE BASE COURSE
   A. Material for aggregate base course shall as specified under Division 2 Section, EARTHWORK.

2.02 AGGREGATE SUBBASE COURSE
   A. Material for aggregate subbase course shall as specified under Division 2 Section, EARTHWORK.

2.03 BITUMINOUS CONCRETE
   A. Bituminous concrete shall be a standard plant-mixed, hot-laid paving material for road work, consisting of clean, crushed rock aggregate, mineral filler, and asphalt conforming to the following:

      1. ConnDOT Specifications Section M.04.

   B. Bituminous Concrete Mixtures: Bituminous concrete for roadway and parking lot pavements and patching shall be furnished in accordance with ConnDOT Specifications, except as modified herein.

      1. Bituminous concrete pavement for walkways shown on the Drawings shall consist of 2 courses of bituminous concrete with a minimum finished pavement depth after rolling equal to the following:

         a. Total Compacted Pavement Thickness shall be as indicated on the Contract Documents.

         b. Binder course shall consist of one lift of .375 Superpave Level 1 or Class 2 Surface Course bituminous concrete to thickness as shown on the Contract Documents.

         c. Top course shall consist of one lift of .375 Superpave Level 1 or Class 2 Surface Course bituminous concrete to thickness as shown on the Contract Documents.

      2. Bituminous concrete material shall conform to ConnDOT Specifications.
2.04 BITUMINOUS MATERIALS

A. Bituminous crack sealer shall be a hot-applied bituminous sealer conforming to Fed. Spec. SS-S-1401.

PART 3 EXECUTION

3.01 GRADING

A. Areas to be paved shall be compacted and brought approximately to subgrade elevation as specified, performed and paid for under the work of Division 2 Section, EARTHWORK, before work of this Division 2 Section, BITUMINOUS CONCRETE WALKWAYS, is performed. Final fine grading, filling, and compaction of subgrade to receive paving, as required to form a firm, uniform, accurate, and unyielding subgrade at required elevations and to required lines, shall be specified, performed under the Division 2 Section, EARTHWORK, of this Specification.

B. Existing subgrade material that will not readily compact as required shall be removed and replaced with satisfactory materials. Additional materials needed to bring subgrade to required line and grade and to replace unsuitable material removed shall be material specified, delivered, installed under the Division 2 Section EARTHWORK, of this Specification.

C. Subgrade of areas to be paved shall be recompacted as required to bring top 8 inches of material immediately below gravel base course to a compaction of at least 95 percent of maximum density, as determined by ASTM D 1557, Method D. Subgrade compaction shall extend for a distance of at least 12 inches beyond pavement edge.

D. Excavation required in pavement subgrade shall be completed before fine grading and final compaction of subgrade are performed. Where excavation must be performed in completed subgrade or subbase subsequent backfill and compaction shall be performed as directed by the Owner’s Representative as specified, performed and paid for under the work of the Division 2 Section EARTHWORK, of this Specification. Completed subgrade after filling such areas shall be uniformly and properly graded.

E. Areas being graded or compacted shall be kept shaped and drained during construction. Ruts greater than or equal to 2 inches deep in subgrade, shall be graded out, reshaped as required, and recompacted before placing pavement.

F. Materials shall not be stored or stockpiled on subgrade.

G. Disposal of debris and other material excavated and/or stripped as specified, performed and paid for under the work of this Division 2 Section BITUMINOUS CONCRETE WALKWAYS, and material unsuitable for or in excess of requirements for completing
work of this Division 2 Section BITUMINOUS CONCRETE WALKWAYS, shall conform to the following:

1. Material shall be legally disposed of off-site.

H. Prepared subgrade will be inspected by the Owner’s Representative. Subgrade will be approved by the Owner’s Representative before installation of paving base course. Disturbance to subgrade caused by inspection procedures shall be repaired as specified, performed and paid for under Division 2 Section EARTHWORK, of this Specification.

3.02 BASE COURSE

A. Aggregate base course shall be to depths as shown on the Drawings. Aggregate base course for bituminous paving shall be provided, installed under the Division 2 Section EARTHWORK, of this Specification.

3.03 BITUMINOUS PAVING

A. Bituminous paving mixture, equipment, methods of mixing and placing, and precautions to be observed as to weather, condition of base, and related requirements shall conform to the following:

   1. ConnDOT Standard Specifications for Roads, Bridges, and Incidental Construction Section 4.06 and M.04

B. Bituminous binder and top surface courses shall each be applied individually, in single lifts of full thickness indicated on the Drawings.

C. No mix shall be placed on wet or damp surfaces. No mix shall be placed when ambient temperatures meet the following as stated in ConnDOT Standard Specification for Roads Bridges and Incidental Construction Section 4.06:

<table>
<thead>
<tr>
<th>Temperature Limitations for Placement of Pavement</th>
<th>Minimum Temp. – Degrees F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness of the Individual course for Air and Surface (inches)</td>
<td>Final Course</td>
</tr>
<tr>
<td>Less than 1.57”</td>
<td>50</td>
</tr>
<tr>
<td>1.57” to 2.36”</td>
<td>39.2</td>
</tr>
<tr>
<td>Over 2.36”</td>
<td>39.2</td>
</tr>
</tbody>
</table>
D. The temperature of bituminous concrete mixture when delivered to the site shall conform to ConnDOT Specifications and be within +/- 59 degrees of the temperature specified in the approved mix formula unless the opinion of the Owner’s Representative differs.

E. The Owner’s Representative may require the Contractor to remove and replace at this own expense any defective mix not conforming to the specified job mix formula.

1. If, at any time before the final acceptance of the work, any soft, imperfect places or spots shall develop in the surface, all such places shall be removed and replaced with new materials and then compacted until the edges at which the new work connects with the old become invisible.

F. Adjacent paving and curb work shall be protected from stain and damage during entire operation. Damaged and stained areas including curbs shall be replaced or repaired to equal their original condition.

G. Application of Tack Coat: Areas to receive tack coat prior to paving operations shall be swept clean of loose materials, dirt or other extraneous materials. Application of tack coat shall be at a rate of 0.10 gallon per square yard. The following areas shall be treated:

1. All cut edges of existing bituminous concrete pavement adjacent to placement of new paving.
2. Against all vertical structures.
3. As a tack coat for all bituminous base courses that do not have the top course installed within a 24 hr. period after placement of the base course.

H. The surface of the pavement to be resurfaced shall receive a bituminous prime coat before laying bituminous binder course. Prime coat shall be applied at rate which will leave bituminous residue of 5 to 7 gallons per 100 sq. yd. after evaporation of vehicle. Base surface shall be dry and clean when prime coat is applied. Bituminous paving material shall not be placed until solvent vehicle has completely evaporated from prime coat. Adjoining new paving shall be placed before prime coat has dried or dusted over.

I. Deliveries shall be timed to permit spreading and rolling all material during daylight hours, unless artificial light, satisfactory to Owner’s Representative, is provided. Loads which have been wet by rain or otherwise will not be accepted. Hauling over freshly laid or rolled material will not be permitted.

J. Spreading and Finishing:

1. The equipment for spreading and finishing shall be mechanical, self-powered pavers, capable of spreading and finishing the mixture true to lines, grade, width.
and crown by means of fully automated controls for both longitudinal and transverse slope.

2. If, during construction, it is found that the spreading and finishing equipment in use leaves tracks or indented areas, or produces other permanent blemishes in the pavement, which are not satisfactorily corrected by the scheduled operations, the use of such equipment shall be discontinued and other satisfactory spreading and finishing equipment shall be provided by the Contractor.

3. The mixtures shall be placed and compacted only at such times as to permit the proper inspection and checking by the Owner’s Representative.

4. The mixtures shall be placed only upon approved surfaces that are clean from foreign materials and dry; and when weather conditions are suitable.

5. The contact surfaces of curbing, manholes, catch basins or other appurtenant structures in pavement shall be painted thoroughly with a thin uniform coating of bitumen, just before any mixture is placed against them. This requirement shall be included as work incidental to paving operations.

6. Machine Spreading: All mixtures shall be deposited in an approved mechanical spreader and immediately spread thereby, and then struck off in a uniform layer to the full width required and of such depth that each course, when compacted, shall have the required thickness and shall conform to the grade and cross section contour specified.

7. Hand Spreading: Spreading by hand methods will be permitted only for particular locations in the work which because of irregularity, inaccessibility or other unavoidable obstacles do not allow mechanical spreading and finishing.

K. Placing and rolling of mixture shall be as nearly continuous as possible. Rolling shall begin as soon after placing as mixture will bear the operation without undue displacement. Delays in rolling freshly spread mixture will not be permitted. Rolling shall proceed longitudinally, starting at edge of newly placed material and proceeding toward previously rolled areas. Rolling overlap on successive strips shall be greater than or equal to 1/2 width of roller rear wheel. Alternate trips of roller shall be of slightly different lengths. Corrections required in surface shall be made by removing or adding materials before rolling is completed. Skin patching of areas where rolling has been completed will not be permitted. Course shall be subjected to diagonal rolling, crossing lines of the first rolling while mixture is hot and in compactable condition. Displacement of mixture or other fault shall be corrected at once by use of rakes and application of fresh mixture or removal of mixture, as required. Rolling of each course shall be continued until roller marks are eliminated. Roller shall pass over unprotected edge of course only when paving is to be discontinued for sufficient time to permit mixture to become cold.
L. In places not accessible to roller, mixture shall be compacted with hand tampers. Hand tampers shall weigh at least 50 pounds and shall have a tamping face less than or equal to 100 square inches. Mechanical tampers capable of equal compaction will be acceptable in areas in which they can be employed effectively.

M. Compaction:

1. After the paving mixture has been properly spread, compaction shall be obtained by the use of power rollers of approved design and weight per inch of roller. The rollers shall be steel wheeled supplemented with pneumatic-tired rollers where required.

2. Along curbs, structures and all places not accessible with a roller, the mixture shall be thoroughly compacted with mechanical tamping devices. The surface of the mixture after compaction shall be smooth and true to the established line and grade.

3. The densities of the completed pavement shall be not less than 95 percent of the density obtained from laboratory compaction of a mixture composed of the same materials in like proportions.

N. Portions of pavement courses which become mixed with foreign material or are in any way defective shall be removed, replaced with fresh mixture, and compacted to density of surrounding areas. Bituminous material spilled outside lines of finished pavement shall be immediately and completely removed. Such material shall not be employed in the work.

O. Joints shall present same texture, density, and smoothness as other sections of the course. Continuous bond shall be obtained between portions of existing and new pavements and between successive placements of new pavement. New material at joints shall be thick enough to allow for compaction when rolling. Compaction of pavement, base, and subgrade at joints shall be such that there is no yielding of new pavement relative to existing pavement when subjected to traffic.

P. Contact surfaces of previously constructed pavement (if greater than or equal to two days since binder placed), manholes, and similar structures shall be thoroughly cleaned and painted with a thin uniform coating of bitumen immediately before fresh mixture is placed. Tack coat shall be applied at rate which will leave bituminous residue of 5 to 7 gallons/100 yd.² after evaporation of vehicle. Base surface shall be dry and clean when tack coat is applied. Bituminous paving material shall not be placed until vehicle has completely evaporated from tack coat. Adjoining new paving shall be placed before tack coat has dried or dusted over.

Q. Earth or other approved material shall be placed along pavement edges in such quantity as will compact to thickness of course being constructed, allowing at least 12 inches of shoulder width to be rolled and compacted simultaneously with rolling and compacting.
surface. Pavement edge shall be trimmed neatly to line before placing earth or other approved material along edge.

R. Variations in pitch of finished surface shall be less than or equal to the following tolerances when tested with a 10 foot straightedge, applied both parallel to and at right angles to centerline of paved area.

1. For walkway pavement surface course - 1/4 inch in 10 feet.

2. At joint with existing pavement, and at other locations where an essentially flush transition is required, pavement elevation tolerance shall not exceed 0.01 feet.

3. At other areas pavement elevation tolerance shall not exceed ± 0.05 feet.

4. Irregularities exceeding these amounts or which retain water on surface shall be corrected by removing defective work and replacing with new material as specified, performed and paid for under this Division 2 Section BITUMINOUS CONCRETE WALKWAYS.

S. No vehicular traffic of any kind shall be allowed to pass over the newly finished surface until it has had time to set. Seventy-two hours will be considered sufficient time for the pavement to set in most cases, but this period may be extended by the Owner’s Representative as required by weather or other reasons. Under all circumstances, damage to the pavement caused by the Contractor’s or public vehicles driving over the pavement before the pavement has fully cured shall be repaired as specified, performed and paid for under this Division 2 Section BITUMINOUS CONCRETE WALKWAYS, at no additional cost to the Owner.
SECTION 02791
INFIELD MIX

PART 1—GENERAL

1.01 GENERAL REQUIREMENTS

A. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting, or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

A. Perform all work required to complete the work of this section, as indicated. Such work includes, but is not limited to the following:

1. Stripping, stockpiling and re-installing infield mix from on-site sources.
2. Furnishing and installing infield mix from off site sources as required to complete this section.
3. Furnishing and installing all line whiting for softball, baseball and little league fields.
4. Amending infield mix with calcined clay.

1.03 RELATED WORK UNDER OTHER SECTIONS

- Section 02210 – SITE PREPARATION AND DEMOLITION
- Section 02270 – EROSION CONTROL
- Section 02300 – EARTHWORK
- Section 02600 – STORM DRAINAGE SYSTEM
- Section 02810 – SITE IRRIGATION SYSTEM
- Section 02931 – ATHLETIC FIELDS

1.04 SUBMITTALS

A. Submit manufacturer's product data for each type of material and/or equipment required.

B. Submit testing results verifying that the infield mix meets the mechanical analysis and density requirements set forth in this specification.
1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver manufactured products in manufacturer's original, unopened, and undamaged containers with labels intact and legible.

B. Store and handle manufactured products to prevent damage and deterioration.

1.06 PROJECT CONDITIONS

A. General: The Contractor shall visit and accept the site as he finds it, and shall inform himself of the character and the type of site. The Contractor shall walk the site with the Owner prior to commencing work to review the full scope of work.

B. Damage or loss to site improvements shall be at the risk of the Contractor from and after the date of Contract execution, and no such damage or loss shall relieve the Contractor from any obligation under the Contract.

C. Do not begin line whiting work before completion of final grading and surfacing.

PART 2—PRODUCTS

2.01 SKINNED INFIELD MIX

A. To the extent feasible, re-use existing infield mix.

B. In the event that the existing infield mix is not suitable for re-use, import skinned infield mix equivalent to General 2 mm Infield mix as supplied by Accusools, Boston, MA (866) 222-6644, Read Sand & Gravel, Rockland, MA (781) 878-2955, or Nardone Sand and Stone, Westford, MA (978) 692-8221, and shall meet the following general requirements.

1. Density: 70-75 lbs. per cubic foot or 1,890-2,025 lbs. per cubic yard.
2. Mechanical Analysis:

2.02 CALCINED CLAY

A. Calcined Clay for skinned infield amendment shall be Turface MVP as manufactured by Profile and supplied by Beacon Ballfields, Middleton, WI, (800) 747-5985, or approved equivalent.

2.03 CLAY BRICKS

A. Clay for batter’s boxes and pitcher’s mounds shall be solid brick form clay by Beacon Pro Brick as supplied by Beacon Ballfields, Middleton, WI, (800) 747-5985, or approved equivalent.
2.04 LINE MARKING

A. Whiting shall be a fine dry white powder prepared from natural chalk or oolitic calcium carbonate, and shall be free from grit or deleterious impurities.

B. Whiting shall show the correct microscopical characteristics of the kind required and shall comply with the following requirements.

<table>
<thead>
<tr>
<th></th>
<th>MINIMUM</th>
<th>MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Carbonate CaCo3</td>
<td>95.0%</td>
<td>-----</td>
</tr>
<tr>
<td>Fe 0 and Al 0</td>
<td>-----</td>
<td>1.0%</td>
</tr>
<tr>
<td>Water Soluble Matter</td>
<td>-----</td>
<td>0.5%</td>
</tr>
<tr>
<td>Matter Insoluble in Dilute HCl</td>
<td>-----</td>
<td>4.0%</td>
</tr>
<tr>
<td>Passing 100 Mesh Sieve</td>
<td>100.0%</td>
<td>-----</td>
</tr>
<tr>
<td>Retained on 200 Mesh Sieve</td>
<td>-----</td>
<td>1.0%</td>
</tr>
<tr>
<td>Retained on 325 Mesh Sieve</td>
<td>-----</td>
<td>6.0%</td>
</tr>
</tbody>
</table>

PART 3—EXECUTION

3.01 INSPECTION

A. Obtain the written approval of the Owner for subgrade prior to spreading of the infield mix. By spreading the infield mix prior to receiving the written approval of the Owner, the Contractor assumes acceptance of the subgrade condition and the responsibility to repair deficiencies resulting from incorrect grades at his sole cost.

3.02 PREPARATION

A. Remove loose material and debris from base surface before installing infield mix.

B. Locate and layout all infield areas for softball, baseball and little league fields, including the pitcher's mounds, base cutouts, catcher's and batter's boxes area as well as all field markings. Obtain Owner's acceptance of layout prior to installation.

3.03 INSTALLATION

A. Incorporate Calcined Clay into infield mix to a depth of 3” in accordance with manufacturer’s installation recommendations at a rate of not less than one (1) ton per 1000 s.f.

B. Place Clay Bricks for softball, baseball and little league fields as follows:

1. Batters boxes and pitcher’s mound, 6” depth min. in areas shown on drawings per suppliers instruction. Cover with ½” infield mix.

3.04 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove
from site all debris and equipment. Repair all damage resulting from installation.

3.05 INSTALLATION - LINE MARKING

A. Lines marking skinned area for field shall be carefully laid out and marked on the surface with specified whiting using a line marking machine.

END OF SECTION 02791
SECTION 02800
SITE IMPROVEMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 1, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install designated Site Improvements and related items as indicated on the Contract Documents, as specified in this Section, and includes, but is not limited to, the following:

1. Bench
2. Trash Receptacle
3. Removable Bollard
4. Dugout
5. Scoreboard
6. Public Address System

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1. Division 2 Section, SITE PREPARATION
2. Division 2 Section, EARTHWORK
3. Division 2 Section, SITE CAST-IN-PLACE CONCRETE

1.04 REFERENCES

A. The following standards shall apply to the work of this Section:

Construction

2. ASTM: American Society for Testing and Materials

B. National Concrete Masonry Association Standard "Specifications for the Design and Construction of Load Bearing Concrete Masonry." (NCMA)


D. ACI: American Concrete Institute

530-99/530.1-99 Building Code Regulations for Masonry Structures and Specifications for Masonry Structures and Commentaries

E. ASTM: American Society for Testing and Materials

A82-97a Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
A153/ Standard Specification for Zinc Coating (Hot-dip) on Iron and A153M Steel Hardware
A276 Standard Specification for Stainless Steel Bars and Shapes
B5 Standard Specification for High Conductivity Tough-Pitch Copper Refinery Shapes
B101 Standard Specification for Lead-Coated Copper Sheet and Strip for Building Construction
C31/C31M Standard Specification for Making and Curing Concrete Test Specimens in the Field
C62 Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)
C67 Standard Test method for Sampling and Testing Brick and Structural Clay Tile
C90 Standard Specification for Loadbearing Concrete Masonry Units
C144 Standard Specification for Aggregate for Mortar Masonry
C150 Standard Specification for Portland Cement
C207 Standard Specification for Hydrated lime for Masonry Purposes
C216 Standard Specification for Facing Brick
C260 Standard Specification for Air-entraining Admixtures for Concrete
C270 Standard Specification for Mortar for Unit Masonry
C426 Standard Test Method for Linear Drying Shrinkage for Concrete Masonry Units
C827 Standard Test Method for change in Height at Early Ages of Cylindrical specimens from Cementious Mixtures
1.05 SUBMITTALS

A. Manufacturer's Literature: Submit copies of each of manufacturer's material descriptions and installation instructions for the following. Submit manufacturer's material descriptions for primer coat and finish coat.

1. Bench
2. Trash Receptacle
3. Removable Bollard
4. Scoreboard
5. Public Address System

B. Complete Shop Drawings for the following:

1. Shop Drawings for installation of Bench
2. Shop Drawings for installation of the Trash Receptacle with side-door-opening
3. Shop Drawings for installation of Dugout
4. Shop Drawings for installation of Scoreboard
5. Shop Drawings for installation of Public Address System

1.06 QUALITY STANDARDS

A. Workmanship and finish shall be equal to the best practice of modern shops for each item of work. Metal fabrication shall be accomplished using the highest standards of workmanship. All work shall be executed by experienced mechanics, shall conform to the requirements of the Contract Documents, and meet the following requirements.

1. Individual metal pieces shall be saw cut and carefully fitted together.
2. Sections shall be well formed to shape and size with sharp lines and angles; curved work shall be sprung evenly to curves.
3. Exposed surfaces shall have a smooth finish and sharp, well defined lines and arises.
4. Grind all edges of bars and plates completely free from nicks and machine marks, prior to galvanizing, shop priming, or finishing.
5. All surfaces and connections of metal items shall be without visible grinding marks, surface differentiation or variation.
6. All fabricated metal items shall be fine sanded throughout to produce a high standard of surface smoothness.
7. Castings shall have sharp corners and edges and shall be clean, smooth and true to pattern.
8. Welding shall be continuous and shall extend for the entire length of the joints except where specifically indicated on the Contract Documents. All exposed welds shall be ground smooth.
9. The use of gas cutting torch in the field for correcting fabrication errors will be permitted only when the prior written approval of the Owner’s Representative has been obtained for each specific condition.
10. Weld with uncoated wire to prevent flux deposits. If coated wire is used, all flux residue shall be thoroughly removed and bare white metal exposed, prior to galvanization, if
applicable. Where overlapping surfaces are welded, seal off contact area by welding all edges around contact area.

11. All welds shall be water tight.

12. All shop connections shall be full seam welded and ground flush and smooth. Field connections bolted unless otherwise permitted as indicated in this Division 2 Section SITE IMPROVEMENTS. Draw up all threaded connections tightly, after buttering same with pipe joint compound, to exclude water. Deform threads to prevent loosening for all exposed connections subject to vandalism.

### 1.07 GENERAL INSTALLATION

A. Where anchors, bolts or fasteners are exposed, they shall be configured or secured in such a way as to prevent their casual removal by use of vandal-proof heads or fastenings unless otherwise specified on Drawings.

B. All metal inserts, anchor slots, anchors, anchor bolts, fastenings, and other fastening devices, for attachment of site improvement items to pavements, except as otherwise specified under other Sections of this Specification, shall be in specified, provided, delivered installed and paid for under the work of this Division 2 Section, SITE IMPROVEMENTS.

C. Unless specifically called out in the Contract Documents, galvanized steel or cast iron sections to be joined shall not be welded after galvanizing but shall be mechanically attached by means of unexposed sleeves and fasteners sufficient to provide secure attachment under normal usage.

D. Free-standing site improvement items shall be set plumb and horizontal regardless of the pitch of the finished surrounding grade unless otherwise shown on the Contract Documents.

E. The Contractor shall be responsible for timing the delivery of site improvement items so as to minimize the on-site storage time prior to installation. All stored materials shall be protected from weather, careless handling and vandalism.

F. Contractor shall be responsible for the correct location of site improvement items. Take particular care to maintain shapes, plumb and level during the pouring of concrete.

G. All Work shall be accurately set to established lines and elevations and rigidly set in place to supporting construction.

### 1.08 COORDINATION

A. The work of this Division 2 Section SITE IMPROVEMENTS shall be completely coordinated with the work of other Sections. Verify dimensions and work of other trades that adjoin materials of this Division 2 Section SITE IMPROVEMENTS, before installing items specified.
B. Obtain all necessary templates and patterns required from other trades for proper
execution of work of this Division 2 Section SITE IMPROVEMENTS. Coordinate the
delivery of items, templates, and patterns manufactured by other trades to maintain
construction schedule. Receive from other trades items to be installed under this Division
2 Section, SITE IMPROVEMENTS.

1.09 GUARANTEE

A. The Contractor shall furnish and deliver standard written manufacturer's guarantee in
Owner's name covering all materials and workmanship under this Division 2 Section,
SITE IMPROVEMENTS, in addition to, and not in lieu of, guarantee requirements set
forth under Division 1, GENERAL REQUIREMENTS, and other liabilities which the
Contractor may have by law or other provisions of the Contract Documents.

B. Supplier shall pay for repairs of any damage to any part of the project caused by defects
in his work and for any repair to the materials or equipment caused by replacement. All
repairs are to be done to the satisfaction of the Owner's Representative.

C. Any part of the work installed under this contract requiring excessive maintenance shall
be considered as being defective, and shall be replaced by the Supplier during the one
year guarantee period at no cost to the Owner.

PART 2 PRODUCTS

2.01 BENCH

A. Bench shall be steel “Bench 58 Series” with backrest as shown on Drawings and as
manufactured by DuMor, Inc., PO Box 142 Mifflintown, PA 17059-0142, (800) 598-
4018, or approved equal. Bench shall have a black polyester powdercoat finish. Size
shall be 6’ long.

B. Anchoring hardware shall be stainless steel anchor bolts sized according to
manufacturer's recommendations and to Contract Drawings. Provide all miscellaneous
hardware appurtenances required to complete anchoring system.

2.02 TRASH RECEPTACLE

A. Trash Receptacle shall be SiteScapes Model HL2-2200: Halo Series Side-Door-Opening
Litter Receptacle, 40 gallon capacity, with flat top lid, as shown on Drawings and as
manufactured by SiteScapes, Inc., P.O. Box 22326, Lincoln, NE 68542, (402) 421-9464,
or approved equal. Finish shall be “DuraCoat”. Color shall be black.

Materials: 7 ga. Laser cut steel sheet container; 3/8” x ¾” steel flat inside support bars;
4” o.d. x 3/8” wall steel decorative rings; 5/16” x 1 1/2” steel flat bar foot plates; 14 ga.
Spun steel lid attached to basket with stainless steel airline cable; 1/4” x 1 1/2” stainless
steel surface mount plates with 9/16” mounting hole; Door Cam lock with key; 40 gallon
High density Polyethylene liner with handle.
B. Anchoring Hardware for surface mount shall be stainless steel anchor bolts sized according to manufacturer's recommendations and to Contract Drawings. Provide all miscellaneous hardware appurtenances required to complete anchoring system.

2.03 **REMOVABLE BOLLARD**

A. Bollard shall be steel Model 66-499/S-1SL as manufactured by DuMor, Inc., PO Box 142 Mifflintown, PA 17059-0142, (800) 598-4018, or approved equal.

2.04 **SCOREBOARD**

A. Scoreboard shall be Model BA-7109 as manufactured by Fair-Play Scoreboards, 1700 Delaware Avenue Des Moines, IA 50317, (800) 247-0265, or approved equal.

2.05 **PUBLIC ADDRESS SYSTEM**

A. Public Address System shall be Technomad Turnkey PA System Model iPA2-Medium Install Pa System as manufactured by Technomad, (800) 464-7757, or approved equal.

2.06 **CONCRETE**

A. Concrete footings shall be 4,000 pounds per square inch cast-in-place concrete as specified under the work of the Division 3 Section CAST-IN-PLACE CONCRETE of this Specification.

B. Concrete and reinforcement for dugouts shall be as specified on the contract documents.

2.07 **GROUT**

A. Grout as required for anchoring shall be a pourable, quick setting, non-metallic and non-shrinking hydraulic cement grout equal to the following:

1. Five Star Grout
   U.S. Grout Corporation
   425 Stillson Road
   Fairfield, CT 06430
   (800) 243-2206

2. Sika Grout 212
   Sika Corporation
   Lyndhurst, NJ 07071
   (201) 933-8800
2.08 EARTHWORK MATERIALS

A. All backfill materials, including base and subbase materials, ordinary borrow, drainage fill and sand shall be as specified under the Division 2 Section 02300, EARTHWORK, of this Specification.

PART 3 EXECUTION

3.01 EARTHWORK

A. All excavation, filling, compacting and grading of backfill materials, including base and subbase materials, ordinary borrow, drainage fill and structural associated with and used in the installation of the items of this Division 2 Section SITE IMPROVEMENTS, shall be as specified under the Division 2 Section EARTHWORK.

3.02 CONCRETE

A. Concrete footing placement, protection and formwork shall be as specified under the Division 3 Section CAST-IN-PLACE CONCRETE. Concrete footings shall be to the sizes noted on the Contract Documents. No calcium chloride will be permitted.

3.03 BENCH

A. Install all items in accordance with manufacturer’s instructions and in locations shown on the Contract Documents and installed and paid for under this Division 2 Section, SITE IMPROVEMENTS.

B. The Contractor shall be responsible for timing the delivery of benches, so as to minimize on-site storage time prior to installation. All stored materials and items must be protected from weather, careless handling and vandalism.

C. No field welding will be permitted.

D. Benches shall be installed level and plumb.

3.04 TRASH RECEPTACLE

A. Install all items in accordance with manufacturer’s instructions and in locations shown on the Contract Documents.
B. The Contractor shall be responsible for timing the delivery of trash receptacles, so as to minimize on-site storage time prior to installation. All stored materials and items must be protected from weather, careless handling and vandalism.

C. No field welding will be permitted.

D. Trash receptacles shall be installed level and plumb.

E. Installation:

1. Mounting: It is not recommended to locate anchor bolts until receptacle is in place. The trash receptacle must be permanently affixed to the ground with three ½” dia. X 5” long stainless steel anchor bolts (supplied by Contractor).

3.05 REMOVEABLE BOLLARD

A. Install all items in accordance with manufacturer’s instructions and in locations shown on the Contract Documents and installed and paid for under this Division 2 Section, SITE IMPROVEMENTS.

B. The Contractor shall be responsible for timing the delivery of bollards, so as to minimize on-site storage time prior to installation. All stored materials and items must be protected from weather, careless handling and vandalism.

C. No field welding will be permitted.

D. Bollards shall be installed level and plumb.

3.06 SCOREBOARD

A. Install all items in accordance with manufacturer’s instructions and in locations shown on the Contract Documents and installed and paid for under this Division 2 Section, SITE IMPROVEMENTS.

B. The Contractor shall be responsible for timing the delivery of the scoreboard, so as to minimize on-site storage time prior to installation. All stored materials and items must be protected from weather, careless handling and vandalism.

C. Scoreboard shall be installed level and plumb

3.07 PUBLIC ADDRESS SYSTEM

A. Install all items in accordance with manufacturer’s instructions and in locations shown on the Contract Documents and installed and paid for under this Division 2 Section, SITE IMPROVEMENTS.
B. The Contractor shall be responsible for timing the delivery of the public address system, so as to minimize on-site storage time prior to installation. All stored materials and items must be protected from weather, careless handling and vandalism.

3.08 ACCEPTANCE STANDARDS

A. Site Improvement items fabricated, provided and delivered and installed under this Division 2 Section SITE IMPROVEMENTS, including bench, fixed table and seats, trash receptacle, and bicycle parking post will be rejected by the Owner’s Representative for the following reasons and as determined by the Owner’s Representative:

1. Upon installation horizontal or vertical curves do not meet the shapes and profiles shown on the Contract Documents. Curves that have broken backs, sags, saddles, tangents or kinks will be rejected.

2. Indications of field welding or cutting.

3. Damage such as scrapes, nicks and dents to the finish.

4. Threaded connections are not drawn up tightly. Threads have not been deformed to prevent loosening.

5. Anchorage into concrete or masonry is not solid but is perceptibly loose. Anchorage does not meet the requirements of the Contract Drawings.

END OF SECTION 02800
SECTION 02810
SITE IRRIGATION SYSTEM

PART 1—GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for the design and installation of irrigation system for site athletic fields and new or replaced lawn areas outside of athletic fields.

B. The work includes the design, furnishing and installation of an automatic irrigation system for watering of athletic fields and new or replaced lawn areas outside of athletic fields including the following:

1. An automatic control system, using climate based controllers and high efficiency equipment. The controller shall have the following features: water budgeting feature; automatic periodic adjustment to the irrigation program, accomplished through external sensors or a provider-supplied signal; multiple start time capability; run times to support low-volume applications; irrigation intervals for days of the week or same day intervals; and more than one operation program(s) for athletic fields and new or replaced lawn areas. Athletic field irrigation shall be permanent while irrigation of new or replaced lawn areas (outside athletic fields) shall be required only until satisfactory turf cover is fully established and approved and discontinued after full turf establishment is achieved.

2. System connection shall be to existing on site water source(s) as directed by the Owner. Contractor shall review the existing water source(s) to determine if it has sufficient capacity to water the new irrigation coverage areas.

3. Provision for drainage of the system.

4. System design conforming to all industry standards for materials, installation and performance established by the Irrigation Association, Falls Church, Virginia. www.irrigation.org

5. Sprinkler overlap of 55% of spray coverage diameter for triangular head layouts and 50% of spray coverage diameter for square head layouts. Spray coverage overlap shall be sufficient to compensate for 4 mph wind distortion.

6. The Contractor shall review with the Owner existing irrigation plans available for Colt Park, and inspect the existing irrigation system. The Contractor shall design a new irrigation system that reuses as much of the existing system as possible.

7. The irrigation system shall be fed from the existing on-site irrigation water source(s) or the adjacent municipal water system. The contractor shall complete all testing, design, and permitting necessary to connect the proposed system to the source. This includes all necessary well pumps, storage tanks, equipment, and
controls. Further, the Contractor and the Owner shall determine if the daily maximum yield from the existing on site source(s) are sufficient to adequately irrigate the site. If existing on site source(s) are insufficient to adequately irrigate the site, the Owner shall direct the Contractor to the next nearest additional water source(s).

8. For athletic fields, the irrigation system shall be designed to maintain the upper four inches (4") of topsoil layer in a thoroughly moistened but not waterlogged condition during the duration of growing season from April 15 to October 15. As directed by the Owner, Contractor shall coordinate the timing of irrigation system so as not to interfere with field usage schedule.

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this Section include:

1. Section 02300 - EARTHWORK
2. Section 02930 - PLANTING

1.03 SUBMITTALS

The Contractor shall submit the following information to the Engineer:

A. Prior to construction:

1. Materials—complete list of materials of all items to be furnished and installed.
2. System Layout—drawing of the system layout to be provided showing locations, water source and all component connections, details, and sprinkler coverages.
3. Calculations—calculations and back-up data of the system design.
4. System warranty language

B. Post Construction:

1. Operation and maintenance manual—operation and maintenance instructions.
2. As-Built Drawings—showing the location of the piping and sprinkler heads, junctions, and controls.
3. Final system warranty

1.04 PROTECTION

A. The Contractor shall use extreme care in excavating to prevent damage to existing site and building structures, utilities and other facilities. Any damage that occurs shall be
corrected by repair or replacement, as required by the Engineer, at no additional cost to the Owner.

B. The Contractor shall block all open ends of installed water pipes with an inflatable membrane plug or other type of plug, to prevent the introduction into the pipe of ground water, debris, animals and other contaminants when work is stopped for any reason.

1.05 TESTING

A. The Contractor shall test the entire irrigation system in the presence of the Engineer. The test shall clearly demonstrate that each and every part of the system functions as specified.

B. Part circle spray patterns shall be adjusted as required to provide complete coverage of the areas to be watered.

C. Automatic and manual features of the irrigation controller shall be tested for satisfactory operation. The controller shall automatically operate each zone in the irrigation system for not less than one-half hour during which time each remaining zone shall be added to the automatic cycle by means of manual control switches. If unsatisfactory performance of the controller develops, the condition shall be corrected and the testing procedures repeated until satisfactory operation is obtained.

D. Before any portion of the pipe is backfilled, water shall be turned into that portion of the pipe and maintained at full pressure for a period of not less than one hour after all air has been expelled. Any leaks that develop shall be repaired and all defective materials shall be replaced. The pipe shall be plugged or capped where sprinklers are to be installed while making this test.

1.06 CLEANING AND ADJUSTING

A. At the completion of the work, all parts of the installation shall be thoroughly cleaned. All equipment, pipe, valves and fittings shall be cleaned of grease and metal cuttings and sludge which may have accumulated by the operation of the system for testing.

1.07 OPERATION AND MAINTENANCE INSTRUCTIONS

A. Prior to acceptance of the system, the Contractor shall furnish the services of a competent operator to provide a demonstration of the system operation and maintenance requirements to a representative of the Owner.

B. The Contractor shall furnish to the Engineer, for approval, two copies of an operations and maintenance manual containing approved Shop Drawings and Details, and typewritten instructions relative to the care and operation of the equipment, all properly indexed, and bound in a three-ring, hard-cover binder. After the Engineer's approval, the manuals shall be delivered to the Owner. Each manual shall contain the following:

1. Table of Contents.
2. Description of irrigation systems:
   a. Functional and sequential description of all systems.
   b. As-built layout plan including sleeve locations.
   c. Winterization procedure.
   d. Recommended system operation sequence, frequency, length of operation cycle. These shall be related to site evapotranspiration rates, soil absorption rate, and anticipated gpm flow.

3. Listing of manufacturers.

4. Manufacturer's data with multiple model, type, and size listing included, clearly and conspicuously indicating those that are pertinent to the installation:
   a. Description: Literature, Drawings, illustrations, certified performance charts and technical data.
   b. Operation.
   c. Maintenance, including complete troubleshooting charts.
   d. Parts list.
   e. Names, addresses and telephone numbers of recommended repair and service companies.
   f. Guarantee data. Mail warranty information to manufacturer and provide copies to Owner.

1.08 GUARANTEE

A. The Contractor shall give the Owner a written guarantee to make good any and all faults and defects in the plumbing and irrigation system due to defective or improper materials or workmanship that may appear within one year from the date of final acceptance by the Engineer and shall make all changes within the guarantee period required to return the system to correct condition and operation, without cost to the Owner.

PART 2—PRODUCTS

2.01 MATERIALS

A. Main Line Plastic Pipe: All main line pipe 3-inch and smaller shall be Schedule 40, ASTM D-2241 polyvinyl chloride (PVC) pipe.
B. **Lateral Pipe:** Flexible polyethylene (PE) pipe SDR-11.5, PE23, rated at 100 psi, conforming to ASTM D2239.

C. **Sleeves:** Minimum diameter of two times larger than the pipe. Sleeves shall be a minimum of 2-inch diameter and shall be Schedule 40 PVC pipe.

D. **Plastic Fittings:** Schedule 40, polyvinyl chloride (PVC) standard weight.

E. **Solvent Cement:** Compatible with PVC pipe per ASTM D2564-67 and of proper consistency.

F. **Sprinkler Head Risers:** Schedule 80 PVC for risers.

G. **Automatic Controllers:** Electric wall-mounted unit with heavy duty vandal-resistant lockable steel cabinet. 0- to 60-minute timing per station, infinite adjustment with 24-hour program time clock.

H. **Sprinkler Heads:** Rainbird, Weathermatic, Toro or approved equivalent.

1. Pop-up height for turf: 4 inches

I. **Backflow Preventer:** If the irrigation system connects to a potable water line, a type suitable for use in a high hazard cross connection to a potable water system which is in conformance with all local and state requirements and codes (to be provided by building contractor).

J. **Rainfall Sensor:** Sensor designed to cancel operation of the controller during substantial rainfall. Sensor shall be by the same manufacturer as the controller. Rain Bird Rain Check Automatic Rain Shutoff, Toro Rainswitch Model 850-74, or approved equivalent.

K. **Valves:** Types manufactured for irrigation systems by Red-White Valve Corp., Clow Valve Corp.; Toro, or approved equivalent.

L. **Meter:** Shall meet or exceed the requirements of the municipal water department or water utility company.

### PART 3—EXECUTION

#### 3.01 CONSTRUCTION

A. **General**

1. The irrigation system shall be installed in accordance with the manufacturer's instructions.
2. Loam within the limits of trench excavation shall be carefully removed and stockpiled for subsequent replacement in the upper 6 inches of the trench.

3. Where pipes are installed through paved areas, the Contractor shall saw cut and remove pavement. After pipe installation and backfill, the pavement shall be restored with material of the same type and quality as the existing. Contractor has option of tunneling under pavement.

4. Pipe shall be laid in trenches to lines and grades sufficient to provide minimum 1% slope to drain the system for winterization. Prior to placing pipe, the trench shall be graded and prepared to provide a firm and uniform bearing throughout the entire length of the pipe barrel. During backfill operations, the pipe shall be rigidly supported to prevent movement or damage to the pipe and joints.

5. All pipe shall be cut straight and true. After cutting the ends shall be reamed out to the full inside diameter of the pipe.

6. The Contractor shall provide all adapter fittings that may be required for the system.

7. Sleeves shall be installed at all roadway and walkway crossings. Sleeves shall extend 12 inches minimum beyond edge of pavement and locations accurately dimensioned on the as-built drawings.

8. Sprinkler connections shall be installed on swing joints as detailed on the manufacturer's drawings.

9. All wire required to connect the solenoid valves to the irrigation controller shall be installed in accordance with local and state requirements.

10. The irrigation controllers shall be permanently installed in the building mechanical equipment room. Contractor shall mount controller onto the wall and energize the controller. The Contractor shall install all 24V wiring to electrical valves, and conduit from controllers to pipe sleeves inside the building.

11. Manual drain valves shall be installed on the main line pipe. The valves shall be protected by a valve cap. A minimum of one cubic yard of crushed stone shall be placed under the drain valve.

12. Install a combination of drains and quick coupler valves to accommodate forced air system winterization.

13. Concrete thrust blocks shall be provided for pipes greater than 1 inch at all bends, tees, and dead ends and shall bear against soil or ballast of sufficient stability to resist thrusts.

14. Backflow preventer shall be installed by a plumber licensed in Connecticut.
3.02 EXCAVATION AND BACKFILLING

A. Trenches shall be excavated to the depth required for the following minimum cover to finish grade and extreme care shall be taken to avoid disturbance of or conflict with athletic field underdrain system.

   1. Main line - 18 inch
   2. Laterals - 12 inch
   3. Control Wires - 12 inch
   4. Sleeves - 18 inch under walks
      - 24 inch under roads and parking areas

3.03 PIPE LINE ASSEMBLY

A. Plastic pipe and fittings shall be solvent welded using solvents and methods recommended by manufacturer of the pipe, except where screw connections are required. Pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before applying solvent with a non-synthetic bristle brush.

B. Pipe may be assembled and welded on the surface. Snake pipe from side to side of trench to allow for expansion and contraction.

C. Make all connections between plastic pipe and metal valves or steel with threaded fittings using plastic male adapters.

3.04 SPRINKLER HEADS

A. Sprinklers: Install plumb to within 1/16 inch, with top collar (not nozzle) flush with finish grade.

B. Provide swing joint with each sprinkler.

   1. Swing joint not required where entire head is raised above grade and/or where rigid riser piping is required.

C. Heads adjacent to paving and curbs: Located between 1 inch and 4 inches from edge of paving or back of curb.

D. Riser pipe shall be cut with a standard pipe cutting tool with sharp cutters. Ream only to full diameter of pipe and clean all rough edges or burrs. Cut all threads accurately with sharp dies. Not more than three full threads shall show beyond fittings when pipe is made up. Assemblies shall conform to manufacturer’s recommendations.
3.05 VALVES

A. Do not locate beneath paved surfaces.
B. Install plumb to within 1/16 inch.
C. Located within a valve box with a 6 inch (deep) layer of washed gravel below the bottom of the valve.
   1. Top of quick coupler valves shall be as close to the top of the valve box as possible. Top of gravel layer shall be 3 inches below top of valve.
D. Install master valve immediately behind backflow preventer and energize through the master valve circuit on the automatic controller.

3.06 ELECTRICAL CONNECTIONS

A. Install the electrical connection to the system as directed by the Owner.
B. Do not run control wiring and power supply wiring in the same conduit.
C. Provide continuous runs of wire between the controller and valves.
D. Splices will only be permitted in valve boxes and shall be made with water-tight connectors.
E. Bury control wire beside pipe in same trench and bundle and tape together at not more than 10 foot intervals.
F. Construct expansion loops by wrapping wire around a 1/2 inch diameter pipe to create a coil. A 3-foot section of wire shall be used to create a 12-inch coil, and a 6-foot section used to create a 24-inch coil.
   1. Provide 12-inch expansion loops at each change of wire direction.
   2. Provide 24-inch expansion loops at each control valve and where each valve wire enters the conduit to the automatic controller.

3.07 BACKFLOW PREVENTER

A. Install to meet the manufacturer’s and municipal water department, or water company, requirements.
B. Provide a combination of drains and quick coupler valves to accommodate winterization of the entire system by forced air.
C. Install backflow preventer in meter pit, or mechanical room, as directed by the Owner.
3.08 BACKFILL AND COMPACTION

A. After system is operating and required inspections have been made, backfill with clean soil and compact in conformance with the requirements of Section 02300.

END OF SECTION 02810
SECTION 02820
CHAIN-LINK FENCES

PART 1—GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:

1. Galvanized steel chain-link fabric
2. Aluminum-coated, steel chain-link fabric
3. Zn-5-Al-MM alloy-coated, steel chain-link fabric
4. PVC-coated, steel chain-link fabric
5. Aluminum chain-link fabric
6. Galvanized steel framework
7. Polymer-coated steel framework
8. Aluminum framework
9. Privacy slats
10. Barbed wire
11. Barbed tape
12. Gate operator
13. Grounding and bonding

B. Related Section include the following:

1. Section 02300 "EARTHWORK" for filling and for grading work.

1.03 DEFINITIONS

A. CLFMI: Chain Link Fence Manufacturers Institute.

B. Zn-5-Al-MM Alloy: Zinc-5 percent aluminum-mischmetal alloy.

C. ASTM: American Society for Testing Materials

1.04 SUBMITTALS

A. Product Data: Material descriptions, construction details, dimensions of individual components and profiles, and finishes for the following:

1. Fence and gate posts, rails, and fittings
2. Chain-link fabric, reinforcements, and attachments
3. Gates and hardware
4. Privacy slats
5. Barbed wire
6. Barbed tape
7. Gate operators, including operating instructions
8. Motors: Show nameplate data, ratings, characteristics, and mounting arrangements

B. Shop Drawings: Show locations of fence, each gate, posts, rails, and tension wires and details of extended posts, extension arms, gate swing, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, elevations, sections, gate swing and other required installation and operational clearances, and details of post anchorage and attachment and bracing.

C. Samples for Initial Selection: Manufacturer's color charts or 6-inch (150-mm) lengths of actual units showing the full range of colors available for components with factory-applied color finishes.

D. Samples for Verification: For the following products, in sizes indicated, showing the full range of color, texture, and pattern variations expected. Prepare Samples from the same material to be used for the Work.

1. PVC-coated steel wire fabric in 6-inch lengths.
2. Polymer coating in 6-inch lengths on shapes for posts, rails, gate framing, and wires.

E. Product Certificates: Signed by manufacturers of chain-link fences and gates certifying that products furnished comply with requirements.

F. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Owners, and other information specified.

G. Field Test Reports: Indicate and interpret test results for compliance of chain-link fence and gate grounding and bonding with performance requirements.

H. Maintenance Data: For the following to include in maintenance manuals specified in Division 1:

1. Polymer finishes
2. Gate operator

1.05 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
B. **Testing Agency Qualifications**: Testing agency as defined by OSHA in 29 CFR 1910.7 or a member company of the International Electrical Testing Association and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies, to supervise on-site testing specified in Part 3.

C. **Source Limitations for Chain-Link Fences and Gates**: Obtain each color, grade, finish, type, and variety of component for chain-link fences and gates from one source with resources to provide chain-link fences and gates of consistent quality in appearance and physical properties.

D. **Electrical Components, Devices, and Accessories**: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. **UL Standard**: Provide gate operators that comply with UL 325.

F. **Emergency Access Requirements**: Comply with requirements of authorities having jurisdiction for automatic gate operators serving as a required means of access.

### 1.06 PROJECT CONDITIONS

A. **Existing Utilities**: Do not interrupt utilities serving facilities occupied by Owner or others.

B. **Field Measurements**: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

### 1.07 Reference Standards

A. References herein are made in accordance with the following abbreviations and all work shall conform to the latest editions, as applicable.


D. ASTM A116—Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric.

E. ASTM A120—Pipe, Steel, Black, and Hot-Dipped Zinc coated (Galvanized) Welded and Seamless, for Ordinary Uses.

F. ASTM A121—Zinc-Coated (Galvanized) Steel Barbed Wire.

G. ASTM A153—Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
PART 2—PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Color Guard Fence Products, Inc.
2. Merchants Metals, Statesville, N.C.
3. Master-HALCO, Lahabra, CA

2.02 CHAIN-LINK FENCE FABRIC

A. Steel Chain-Link Fence Fabric: Height indicated on Drawings. Provide fabric fabricated in one-piece widths for fencing in height of 12 feet and less. Comply with CLFMI's "Product Manual" and with requirements indicated below:
1. Mesh and Wire Size: 2-inch mesh, 0.192-inch diameter.


3. Coat selvage ends of fabric that is metallic coated during the weaving process with manufacturer’s standard clear protective coating.

B. Selvage: Knuckled at both selvages.

2.03 INDUSTRIAL FENCE FRAMING

A. Round Steel Pipe: Standard weight, Schedule 40, galvanized steel pipe complying with ASTM F 1083. Comply with ASTM F 1043, Material Design Group IA, external and internal coating Type A, consisting of not less than 1.8-oz./sq. ft. zinc; and the following strength and stiffness requirements:

1. Line, End, Corner, and Pull Posts and Top Rail: Per requirements for Standard Industrial Fence.

B. Round Aluminum Pipe: Standard weight, Schedule 40, extruded structural aluminum pipe, alloy 6063-T6, mill finish, complying with ASTM B 429. Comply with ASTM F 1043, Material Design Group IB, and the following strength and stiffness requirements:

1. Line, End, Corner, and Pull Posts and Top Rail: Per requirements for Standard Industrial Fence.

C. Round Steel Pipe: Cold-formed, electric-resistance-welded steel pipe. Comply with ASTM F 1043, Material Design Group IC, with minimum yield strength of 50,000 psi; and the following external and internal coatings and strength and stiffness requirements:

1. Coatings: External, Type B, zinc with overcoat consisting of a minimum of 0.9 oz./sq. ft. (0.27 kg/sq. m) of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- (0.0076-mm-) thick, zinc pigmented coating.

2. Coatings: Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. (0.55-kg/sq. m) coating.


D. Roll-Formed Steel Shapes: C-sections or other shape, produced from structural steel. Comply with ASTM F 1043, Material Design Group II, with minimum yield strength of 45,000 psi; and the following coating and strength and stiffness requirements:
1. Coating: Type A, consisting of not less than minimum 2.0-oz./sq. ft. average zinc coating per ASTM A 123/ A 123M.

2. Coating: Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. (0.55-kg/sq. m) coating.


E. Roll-Formed Steel Shapes: Hot-rolled H-beams or other shape, produced from structural steel. Comply with ASTM F 1043, Material Design Group III, with minimum yield strength of 45,000 psi; Standard Industrial Fence strength and stiffness for line posts, and external and internal coating Type A, consisting of not less than minimum 2.0-oz./sq. ft. (0.61-kg/sq. m) average zinc coating per ASTM A 123/A 123M.

F. Square Steel Tubing: Galvanized steel-tubing end, corner, and pull posts and top rail with coating Type A, consisting of not less than 1.8-oz./sq. ft. zinc according to ASTM F 1043, and complying with CLFMI's "Product Manual," Type I for the components and fence fabric height.

G. Post Brace Rails: Match top rail for coating and strength and stiffness requirements. Provide brace rail with truss rod assembly for each gate, end, and pull post. Provide two brace rails extending in opposing directions, each with truss rod assembly, for each corner post and for pull posts. Provide rail ends and clamps for attaching rails to posts.

H. Top Rails: Fabricate top rail from lengths 21 feet (6.4 m) or longer, with swedged-end or fabricated for expansion-type coupling, forming a continuous rail along top of chain-link fabric.

I. Intermediate and Bottom Rails: Match top rail for coating and strength and stiffness requirements.

J. Extended Members: Extend end, corner and pull posts above top of chain-link fabric as required to attach barbed wire assemblies.

2.04 TENSION WIRE

A. General: Provide horizontal tension wire at the following locations:

1. Location: Extended along bottom of fence fabric, when bottom rail is not shown on the Plans.

B. Metallic-Coated Steel Wire: 0.177-inch diameter, marcelled tension wire complying with ASTM A 824 and the following:

1. Coating: Type I, aluminum coated (aluminized).
2. Coating: Type II, zinc coated (galvanized) by the hot-dip process, with the following minimum coating weight: Class 2: Not less than 1.2 oz/sq. ft. (366 g/sq.m) of uncoated wire surface.

3. Coating: Type III, Zn-5-Al-MM alloy with the following minimum coating weight: Class 2: Not less than 1 oz./sq. ft. of uncoated wire surface.

C. Aluminum Wire: 0.192-inch diameter tension wire, mill finished, complying with ASTM B 211 (ASTM B211M), alloy 6061-T94 with 50,000-psi minimum tensile strength.

2.05 FITTINGS

A. General: Provide fittings for a complete fence installation, including special fittings for corners. Comply with ASTM F 626.

B. Post and Line Caps: Provide weathertight closure cap for each post. Material to match post material.

1. Provide line post caps with loop to receive top rail.

C. Rail and Brace Ends: Provide rail ends or other means for attaching rails securely to each gate, corner, pull, and end post. Material to match rails.

D. Rail Fittings: Provide the following:

1. Rail Sleeves: Not less than 6 inches (153 mm) long. Material to match rails.

2. Rail Clamps: Provide line and corner boulevard clamps for connecting rails in the fence line to line posts. Materials to match rails.

E. Tension Bars: Length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post. Material to match fence fabric.

F. Truss Rod Assemblies: Rod and turnbuckle or other means of adjustment. Material to match rails.

G. Barbed Wire Arms: Hot-dip galvanized pressed steel. Provide the Type I, single slanted arm according to ASTM F 626, with clips, slots, or other means for attaching strands of barbed wire. Type I, single slanted arm. Use only where specifically indicated on the drawings.

H. Tie Wires, Clips, and Fasteners: Provide the following types according to ASTM F 626:

1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
a. Hot-Dip Galvanized Steel: 0.148-inch diameter wire, galvanized coating thickness matching coating thickness of chain-link fence fabric.

2. Power-driven fasteners.


4. Round Wire Hog Rings: Hot-dip galvanized steel or aluminum for attaching chain-link fabric to horizontal tension wires.

I. **Pipe Sleeves**: For posts set into concrete, provide preset hot-dip galvanized steel pipe sleeves complying with ASTM A 53, not less than 6 inches long with inside dimensions not less than 1/2 inch more than outside dimension of post, and flat steel plate forming bottom closure.

### 2.06 CAST-IN-PLACE CONCRETE

A. **General**: Comply with ACI 301 for cast-in-place concrete and Section 03301, SITE CAST-IN-PLACE CONCRETE of these specifications.

### 2.07 GROUT AND ANCHORING CEMENT

A. **Nonshrink, Nonmetallic Grout**: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. **Erosion-Resistant Anchoring Cement**: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer for exterior applications.

### 2.08 FENCE GROUNDING

A. **Conductors**: Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 AWG and larger.

1. **Material Above and Below Finished Grade**: Copper.
   Bonding Jumpers: Braided copper tape, 1 inch wide, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.

B. **Connectors and Ground Rods**: Listed in UL 467.

1. Connectors for Below-Grade Use: Exothermic welded type.
2. **Ground Rods**: Copper-clad steel. Size: 5/8 inch by 96 inches.
PART 3—EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance.

1. Do not begin installation before final grading is completed, unless otherwise permitted by Owner’s Representative.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, property monuments, and other features which may affect the Work.

3.03 INSTALLATION, GENERAL

A. General: Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.

B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.

C. Post Setting: Hand-excavate holes for post foundations in firm, undisturbed or compacted soil. Set posts in concrete footing. Protect portion of posts aboveground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during placement and finishing operations until concrete is sufficiently cured.

1. Dimensions and Profile: As indicated on Drawings.

2. Exposed Concrete Footings: Extend concrete 2 inches (50 mm) above grade, smooth, and shape to shed water.

3. Concealed Concrete Footings: Stop footings below grade as indicated on Drawings to allow covering with surface material.

4. Posts Set into Concrete in Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.
5. Posts Set into Concrete in Voids: Form or core drill holes not less than 5 inches (125 mm) deep and 3/4 inch (20 mm) larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.

3.04 CHAIN-LINK FENCE INSTALLATION

A. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more as indicated on Drawings.

B. Line Posts: Space line posts uniformly at 8 feet o.c.

C. Post Bracing Assemblies: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts. Locate horizontal braces at midheight of fabric on fences with top rail and at two-thirds fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

D. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric.

   1. Bottom Tension Wire: Install tension wire within 6 inches of bottom of fabric and tie to each post with not less than same gage and type of wire.

E. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended by fencing manufacturer.

F. Intermediate Rails: Install in one piece at post-height center span as indicated on Drawings, spanning between posts, using fittings, special offset fittings, and accessories.

G. Bottom Rails: Install, spanning between posts, using fittings and accessories.

H. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches between finish grade or surface and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.
J. **Tie Wires:** Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. **Maximum Spacing:** Tie fabric to line posts 12 inches o.c. and to braces 24 inches o.c.

K. **Fasteners:** Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

L. **Privacy Slats:** Install slats in vertical direction as indicated, securely locked in place, for privacy factor of 70.

M. **Barbed Wire:** Install barbed wire uniformly spaced angled toward security side of fence as indicated on Drawings. Pull wire taut and install securely to extension arms and secure to end post or terminal arms.

N. **Tennis Court Fencing:** Construct tennis court fence according to ASTM F 969.

### 3.05 GATE INSTALLATION

A. **General:** Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

### 3.06 GROUNDING AND BONDING

A. **Fence Grounding:** Install at maximum intervals of 1500 feet except as follows:

1. Fences within 100 Feet (30 m) of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet.

2. **Gates and Other Fence Openings:** Ground fence on each side of opening.

   a. Bond metal gates to gate posts.

   b. Bond across openings, with and without gates, except openings indicated as intentional fence discontinuities. Use No. 2 AWG wire and bury it at least 18 inches (460 mm) below finished grade.

B. **Protection at Crossings of Overhead Electrical Power Lines:** Ground fence at location of crossing and at a maximum distance of 150 feet on each side of crossing.

C. **Fences Enclosing Electrical Power Distribution Equipment:** Ground as required by IEEE C2, unless otherwise indicated.
D. **Grounding Method:** At each grounding location, drive a ground rod vertically until the top is 6 inches (150 mm) below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at the grounding location, including the following:

1. Each Barbed Wire Strand: Make grounding connections to barbed wire with wire-to-wire connectors designed for this purpose.

2. Each Barbed Tape Coil: Make grounding connections to barbed tape with connectors designed for this purpose.

E. **Bonding Method for Gates:** Connect bonding jumper between gate post and gate frame.

F. **Connections:** Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.

2. Make connections with clean, bare metal at points of contact.


5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

G. **Bonding to Lightning Protection System:** If fence terminates at lightning-protected building or structure, ground the fence and bond the fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor complying with NFPA 780.

### 3.7 FIELD QUALITY CONTROL

A. **Ground-Resistance Testing Agency:** Engage a qualified independent testing agency to perform field quality-control testing.

B. **Ground-Resistance Tests:** Subject completed grounding system to a megger test at each grounding location. Measure ground resistance not less than two full days after last trace of precipitation, without soil having been moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by two-point method according to IEEE 81.
C. Desired Maximum Grounding Resistance Value: 25 ohms.

D. Excessive Ground Resistance: If resistance to ground exceeds desired value, notify Owner’s Representative promptly. Include recommendations to reduce ground resistance and proposal to accomplish recommended work.

E. Report: Prepare test reports, certified by testing agency, of ground resistance at each test location. Include observations of weather and other phenomena that may affect test results.

3.09 ADJUSTING

A. Gate: Adjust gate to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

3.10 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain gates. Allow one day within Contract amount.

1. Test and adjust hardware, and other operable components. Replace damaged or malfunctioning operable components.

2. Train Owner's personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.

3. Review data in maintenance manuals. Refer to Division 1 Section "Contract Closeout."

4. Schedule training with Owner with at least seven days' advance notice.

END OF SECTION 02820
PART 1—GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 1, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install aluminum tube railings as indicated on the Contract Documents, and as specified in this Section.

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1. Section 03301-CAST-IN-PLACE CONCRETE

1.04 SUBMITTALS

A. Manufacturer’s Literature: Submit copies of each of manufacturer’s material descriptions and installation instructions. Submit manufacturer’s material descriptions for primer coat and finish coat.

B. Shop drawings shall be submitted for approval prior to beginning work. Shop drawings show railing details, connections, layout dimensions, rail sections with part numbers, materials and finish. Expanded Polystyrene (EPS) or Styrofoam blockouts to be provided for post pockets and set by the Contractor according to manufacturer’s show drawing details and/or instructions.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the job site in good condition and properly protected against damage to finished surfaces.

B. Store material in a location and in a manner to avoid damage. Stacking shall be done in a way that will prevent bending. Store material in a clean, dry location away from uncured...
concrete and masonry. Cover with waterproof paper, tarpaulin, or polyethylene sheeting in a manner that will permit circulation of air inside the covering.

C. Keep handling on site to a minimum. Exercise particular care to avoid damage to finishes of materials.

PART 2 PRODUCTS

2.01 TUBE RAILING

A. Aluminum Tube Railing system shall be manufactured by ATR Technologies, Inc., 805 Towne Center Drive, Pomona, CA 91767-5901, (800) 423-4148, or approved equal.

2.02 GROUT

A. Grout shall be non-shrink, non-metallic, non-staining, non-corrosive grout as recommended by manufacturer for exterior applications.

2.03 FINISH

Painted finish shall be a type that meets the requirements of AAMA 5604-98 (Voluntary Specification, Performance Requirements and test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels). One of the following applications may be used:

A. Finish shall be a baked enamel containing 70% Fluorocarbon Resin – Kynar 500 by Atochem North America or Hylar 5000 by Ausimont USA, Inc. applied over the manufacturer’s recommended inhibitive primer. The applicator may use a non-chrome chemical conversion coating pretreatment process in order to comply with AAMA 2604-98.

B. Finish shall be baked enamel containing 50% Fluorocarbon Resin Products or Silicone Polyester applied over the manufacturer’s recommended primer. The applicator may use a non-chrome chemical conversion coating pretreatment process in order to comply with AAMA 2604-98.

C. Finish shall be a High Performance power coating in order to comply with AAMA 2604-98.

Color: Color to be selected by City
PART 3  EXECUTION

3.01   INSTALLATION

Aluminum Tube Railings to be fabricated according to approved shop drawings and actual field dimensions. All materials shall be installed plumb, square, level and shall be anchored securely in proper alignment with adjacent work. Post shall be anchored according to approved shop drawings. Adequate provisions shall be made for thermal expansion and contraction of all exterior railings. All miters and field cuts shall be smoothed after joining. Where aluminum is placed in contact with dissimilar materials, the entire aluminum surface shall be protected by a vinyl tape or epoxy paint barrier.

3.02   FINAL ACCEPTANCE

The Contractor shall complete the railings for final inspection and acceptance as installed according to the contract requirements. The Contractor shall be responsible for protecting the installed railings from subsequent operations of other trades during the balance of construction.

END OF SECTION 02830
PART 1 – GENERAL

1.01 DESCRIPTION

A. This section specifies requirements for the proposed drinking fountain.

B. The work includes:

1. Furnishing and installation of drinking fountain, service connection, valve, valve box, piping and sumps.
2. Disinfecting and testing of the system.

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this section include:

1. Section 02300 – EARTHWORK

1.03 STANDARDS

A. AWWA – American Water Works Association

1.04 COORDINATION WITH THE MUNICIPALITY

A. The municipal water department shall be notified prior to starting construction of any portion of the municipal water system.

B. The closing of valves necessary for making connections with existing municipal system will be done by the water department employees, assisted by the contractor. Sufficient notice shall be given the water department of planned connection. No allowance will be made for any delay in closing of valves. A 48-hour notice shall be given to residents or businesses affected by the shut-down, and shall be done by the contractor under the direction of the engineer.

The water department may require the work to be done at night during the low use time period.

1.05 SUBMITTALS

A. Shop Drawings

1. Submit 5 copies of shop drawings or descriptive literature, or both, showing dimensions, joints and other details of all materials to be furnished. Shop drawings shall be submitted to the engineer for approval prior to ordering materials.
B. As-Built Drawings

1. Submit six (6) copies of as-built drawings upon completion and acceptance of work.

2. As-built drawings shall be complete and shall indicate the true measurements and locations, horizontal and vertical, of all new construction. As-built drawings shall include a minimum of three ties to each gate valve box from fixed permanent objects. As-built drawings shall also contain any additional information required by the municipality, and shall be stamped with the seal of a licensed land surveyor and licensed professional engineer.

PART II – PRODUCTS

2.01 DRINKING WATER FOUNTAIN

A. Model 440 drinking fountain as manufactured by Most Dependable Fountains, Inc., 5705 Commander Drive, P.O Box 587 Arlington, Tennessee 38002-0587, 800-552-6331.
B. Color and finish to be selected by City.

2.02 WATER PIPING

A. Conform to manufacturer’s requirements, and specifications for water systems elsewhere within these contract documents.

2.03 WASTE PIPING

A. Conform to manufacturer’s requirements, and specifications for water systems elsewhere within these contract documents.

PART III – EXECUTION

3.01 INSTALLATION

A. Install all drinking fountain components required for a complete installation as shown on the drawings and in conformance with the manufacturer’s instructions and specifications for water systems elsewhere within these contract documents.

B. Make connection to water supply per specifications for water systems elsewhere within these contract documents.

C. Test water supply connection for leakage and adjust or repair as required.
3.02 PROTECTION

A. Protect drinking fountain and finish until acceptance of the project. Replace drinking fountain and/or touch-up finish surfaces if damaged prior to acceptance.

3.03 PRESSURE TESTING AND DISINFECTION

A. Conform to specifications for water systems elsewhere within these contract documents.

END OF SECTION 02879
SECTION 02880
SITE ATHLETIC EQUIPMENT

PART 1—GENERAL

1.01 GENERAL REQUIREMENTS

A. Include GENERAL CONDITIONS AND SUPPLEMENTARY CONDITIONS as part of this section.

B. Examine all other Sections of the Specifications for requirements, which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK

A. Work Included: Perform all work required to complete the work of the Section, as indicated. Such work includes, but is not limited to, the following:

1. Pitcher’s Rubber, Home Plate and Bases
2. Team Benches
3. Foul Poles

1.03 RELATED WORK

Section 03301 - CAST-IN-PLACE CONCRETE
Section 02791 - INFIELD MIX
Section 02931 - ATHLETIC FIELDS

1.04 REFERENCES

A. ASTM - American Society for Testing Materials

1.05 QUALITY ASSISTANCE

A. Source: For each type of product required for the work of this Section, provide products of one manufacturer and source for consistency.

B. Codes and standards: Perform site improvements work in compliance with applicable requirements of governing authorities having jurisdiction. Workmanship and finish shall be equal to the best practice of modern shops for each item of work.

C. Qualifications of workers: Use adequate numbers of skilled workers who are trained in the necessary crafts and who are familiar with the specified requirements and methods needed for proper performance of the work of this Section.
D. The work of this Section shall be coordinated with the work of other Sections. Verify dimensions and work of other trades, which adjoin materials of this Section before installing items specified.

1.07 SUBMITTALS

A. Product Information: Provide manufacturer’s data showing materials and installation procedures for the following:

1. Pitcher’s Rubber, Home Plate and Bases
2. Team Benches
3. Foul Poles

PART 2—PRODUCTS

2.01 PITCHER’S RUBBER, HOME PLATE AND BASES

A. Pitcher’s Rubbers shall include the following:

1. Regulation 6”x24” pitcher’s rubber with double 1½” ground anchor, two (2) rubber plugs, digout tool, and be TMK 10378 Deluxe Double Stanchion Pitcher’s Rubber as provided by Beacon Athletics, 2222 Evergreen Road #2, Middleton, WI 53562-4231, (800) 747-5985, or approved equivalent.

2. Quantity: one for each ballfield, and one (1) spare to be delivered to Owner.

B. Home Plates shall include the following:

1. Regulation homeplate, molded rubber on a stanchion mounted steel plate, to fit 1 1/2” anchor, and be HP Anchored Homeplate as provided by Beacon Athletics, 2222 Evergreen Road #2, Middleton, WI 53562-4231, (800) 747-5985, or approved equivalent.

2. Anchors and rubber plugs for anchors to be provided.

3. Quantity: Two (2) one for each ballfield, and one (1) spare to be delivered to Owner.

C. Softball Bases shall include the following:

1. Reduced injury cushion base, with “breakaway” base anchors as provided by Rogers USA, Inc., P.O. Box 346, Elizabethtown, PA 17022-0346, (800) 829-7311, or approved equivalent.

2. Quantity: Four (4), three (3) to be installed and one (1) spares to be delivered to Owner.
2.02 TEAM BENCHES

A. Provide two (2) 21’ long x 10” wide all aluminum construction backless team benches. Benches shall be Model 9B26 as manufactured by Kwickgoal, Quakertown, PA (215) 536-2200, or approved equivalent.

2.03 FOUL POLES

A. Provide two (2) aluminum (20’ ht.) foul poles, Model #AFP-22 yellow power-coated finish, 4” diameter, as manufactured by AAE 1-800-523-5471 or www.AAESports.com.

PART 3—EXECUTION

3.01 GENERAL

A. Installation/materials for all items in this section shall meet the applicable requirements of the:

1. National Federation of State High School Association
   P.O. Box 690
   Indianapolis, IN 46206
   (317) 972-6900

3.02 PITCHER’S RUBBER, HOME PLATE AND BASES

A. Assemble and install in accordance with manufacturer’s recommendations.

3.03 TEAM BENCHES

A. Assemble and install in accordance with manufacturer’s recommendations.

3.04 FOUL POLES

A. Assemble and install in accordance with manufacturer’s recommendations.

END OF SECTION 02880
SECTION 02890
ALUMINUM BLEACHERS

PART 1—GENERAL

1.01 RELATED DOCUMENTS
A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 1, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY
A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install aluminum bleachers as indicated on the Contract Documents, and as specified in this Section.
B. The Contractor shall coordinate with manufacturer to have the bleachers delivered and assembled by the manufacturer in the location identified on the construction drawings.

1.03 RELATED WORK UNDER OTHER SECTIONS
A. The following items of related work are specified and included in other Sections of the Specifications:

1. SECTION 03301-CAST-IN-PLACE CONCRETE

1.04 SUBMITTALS
A. Manufacturer's Literature: Submit copies of each of manufacturer's material descriptions and installation instructions. Submit manufacturer's material descriptions for primer coat and finish coat.

1.05 REFERENCES
A. The following standards shall apply to the work of this Section:

1. ASTM A572-50 Structural Steel Hot-Dipped Galvanized after fabrication to ASTM A123 Specifications.
2. The Aluminum Association - Specifications & Guidelines for Aluminum Structures
3. ASTM A307 - Specification for Carbon Steel Bolts and Studs (Ordinary Bolts)
4. ASTM A325 - Specification for Carbon Steel Bolts (High Strength Bolt)
5. All Bolts and Nuts to have a Hot-Dipped Galvanized Finish.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the job site in good condition and properly protected against damage to finished surfaces.

B. Store material in a location and in a manner to avoid damage. Stacking shall be done in a way that will prevent bending. Store material in a clean, dry location away from uncured concrete and masonry. Cover with waterproof paper, tarpaulin, or polyethylene sheeting in a manner that will permit circulation of air inside the covering.

C. Keep handling on site to a minimum. Exercise particular care to avoid damage to finishes of materials.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 10 years experience in the design and manufacture of permanent beam design grandstands.

B. Welders: AWS certified.

1.07 PROJECT/SITE CONDITIONS

A. Owner shall verify site location.

B. Site shall be a flat and level surface; site work by others.

1.08 WARRANTY

A. Grandstands manufactured by E & D Specialty Stands, are warranted for a period of one year against defects in materials and workmanship starting after completion of the project. This does not apply to any damage resulting from neglect, misuse or improper handling of such material by the owner.

PART 2—PRODUCTS

2.01 MANUFACTURER

A. Bleacher shall be 21’ wide with 10 rows of seating with an aisle up the middle as shown on the construction plans and as manufactured by E & D Specialty Stands, Inc., 2081 Franklin Street  P.O. Box 700, North Collins, N.Y. 14111, Tel (800)525-8515, Fax (716) 337-2903, or approved equal.
2.02 ANGLE FRAME BLEACHERS

A. Design: The design shall be in accordance with the generally accepted standards as published by The American Institute of Steel Construction and The Aluminum Association.

B. Design Loads:

1. A uniformly distributed live load of not less than 100 psf of gross horizontal projection of the grandstand.
2. Bleacher shall be designed to withstand, with or without live loads, the horizontal and uplift pressures due to the wind. Wind pressures shall be derived from ANSI/ASCE 7-93, Minimum Design Loads in Buildings and Other Structures.
3. A horizontal swaying force applied to the seats, in a direction parallel to the length of the seats, of 24 lbs./ft.
4. A horizontal swaying force applied to the seats, in a direction perpendicular to the length of the seats, of 10 lb./ft.
5. All seat and footboard members shall be designed for live loads of not less than 120 lb. per lineal foot.
6. Guard rails shall be capable of sustaining a vertical load of 100 plf. And a horizontal thrust of 50 plf. Acting outwardly at the top of the rail.
7. Under these loads, stresses shall not exceed those allowed in the “Specifications for Structural Steel Buildings, June 1, 1989” as adopted by the American Institute of Steel Construction.

C. Shop Connections: Welded and capable of carrying stress put upon them as per AWS standards.

D. Supporting Members (Framework):

1. Main supporting members are to be of a welded angle frame design.
2. Spaced at 6’-0” centers (maximum).
3. Constructed of a minimum 2 x 2 x 3/16” angle.
4. Every frame shall be laterally supported with cross-bracing to the adjacent frame.

E. Dimensions:

1. Length of units - 15’, 21’ 27’
   Number of rows 2, 3, 4, 5, & 10
2. Seat Height: 17 inches

F. Standard E & D Stands:

1. Standard 8” Rise with a 24” row depth
G. Deck Arrangements:
   1. Seats: Nominal 2 x 10, anodized aluminum.
   2. Footboards: Nominal 2 x 10 mill finish aluminum. (Optional 2 @ 2 x 10 mill finish aluminum on 2,3,4,5 row units; Standard on 10 row units)
   3. Riser: Optional on 2,3,4 & 5 row units, Standard on 10 row units.
   4. Vertical aisles with handrails as required by code.

H. Guardrails:
   1. Furnished on sides and back of any bleacher that is 5 rows or higher per code.  
      (Optional on 2,3 & 4 row units)
   2. All pipe shall be 1 5/8” O.D. anodized aluminum pipe with end plugs and elbows at corners. Secured to angle rail posts with galvanized fasteners.
   3. Rails not less than 42” vertically above the center of the seatboard surface shall be provided at the back and sides of the bleacher.
   4. Fencing shall be 2” x 9 ga.galvanized mesh, chain link fence.

I. Mudsills:
   1. 2 x 4 pressure treated wood shall be provided on all frames.

J. Transporting Option:
   1. Galvanized steel angle tow bar
   2. 2 - Pnuematic wheels with axles

K. Tip-N-Roll Package: Optional on 2,3, & 4 row units up to 21’-0” long.
   1. Non-marking rubber grommets shall be provided on all frames.
   2. Caster wheels shall be 4” diameter, swivel mounted non-marking soft rubber.

2.03 MATERIALS

A. Steel: ASTM A572-50 (Hot-Dipped Galvanized)

B. Aluminum: Extruded alloy 6063-T6.

C. Accessories:
   1. High Strength Bolts and Nuts - ASTM A-325 steel
   2. Ordinary Bolts and Nuts - ASTM A-307
   3. Hold-Down Clip Assemblies - Aluminum alloy 6063-T6
   4. End Caps - Channel aluminum alloy 6063-T6
2.04 FINISHES

A. Steel: Galvanized Steel

B. Aluminum:
   1. Anodized: Seat planks, clear anodized 204R1, AA-M10C22A31, Class II.
   3. Paint: Electrostatically applied, baked -on siliconized acrylic or siliconized polyester enamel. (Optional)

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Install bleacher unit in accordance with manufacturer’s installation procedures.

END OF SECTION 02890
PART 1—GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for the preparation and planting of trees, shrubs and other plants in landscaped areas.

B. The work includes:

1. Furnishing and installation of trees, shrubs, and groundcover plants.
2. Fertilizing and backfill soil mix.
3. Maintenance, clean-up, and guarantee.

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this Section include:

1. Section 02300 - EARTHWORK
2. Section 02270 - EROSION CONTROL

1.03 SUBMITTALS

A. Manufacturers Product Data

1. Submit material manufacturer's literature and installation instructions where applicable attesting that the following materials meet the requirements specified:

a. Fertilizer
b. Anti-desiccant
c. Bark Mulch
d. Stakes/Guy Wires

B. Soil Test Reports

1. Prior to ordering the topsoil, submit soil test report to the Owner for review and approval. Do not order materials until the Owner’s approval has been obtained. Delivered materials shall closely match the approved samples.

a. Topsoil: The Contractor shall employ a certified testing laboratory to test the material and submit test representative samples of on-site and off-site topsoil reports directly to the Owner. Reports shall include:
(1) Tests for Phosphorus, Potassium, Calcium, Soluble Salts and soil pH. in accordance with the current "standards" of the Association of Official Agriculture Chemists".

(2) Submittal at least one month before any topsoil spreading is scheduled.

(3) Location of sample source.

C. Certificates

1. A Certificate of Compliance to the specifications shall be submitted by the nursery grower with each shipment of each type of plant, certifying that plants meet the genus, species and cultivator type specified on the plant list.

D. Maintenance Manual

1. The Contractor shall submit a written manual, prepared for the Owner that outlines a schedule for proper maintenance of the plantings. This schedule should include timing and methods for watering, fertilization, mulching, pruning and other maintenance operations.

E. Submittal Schedule

1. Before installation:
   a. Manufacturer's Product Data. See Section 1.07.A
   b. Soil Test Reports.
   c. Plant Certification.

2. After Installation and before acceptance

1.04 QUALITY ASSURANCE

A. All planting operations shall be performed by experienced personnel under competent supervision. Education, experience and certification or license by appropriate organization may be reviewed to evaluate competence.

B. Plant Approval: Plants shall be inspected and approved by the Owner. Plants shall be inspected at the grower's nursery and upon delivery at the site for conformity to specification requirements. Approval of plants at the source does not replace additional inspection and rejection at the site, or during the progress of the work. Rejected plants shall be removed immediately from the site. A Contractor's representative shall be present at all inspections. All plants on the Plant List shall be pre-selected by the Contractor to ensure that plants of specified size and species are available at the nursery before the plant selection
trip is scheduled. The Owner’s cost for inspection trips outside the State of Connecticut shall be paid by Contractor.

1.05 TESTING

A. All topsoil obtained from on-site and off-site used in the work shall be tested prior to being spread or mixed. All testing shall be done by approved independent test laboratory or by the University of Connecticut Cooperative Extension Service. Contractor shall provide required representative samples of material for testing to the testing laboratory site.

B. Test Analysis shall include:

- Classification of soil
- Percent sand, silt and clay particles
- Percent organic content
- Percent soluble salt index

C. Test reports shall include specific recommendations as to the exact types, times and rates of application of soil additives and fertilizers based upon the soil test results and type of material to be planted.

D. Specified soil additive materials and fertilizer types and requirements are approximate and all soil additives shall be adjusted to comply with test reports.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver plant materials to site in healthy and undamaged condition.

B. Move plant material with solid balls wrapped in burlap or synthetic wrapping.

C. Deliver plant materials immediately prior to placement. Keep plant materials moist. As required by temperature or wind conditions, apply anti-desiccant emulsion to prevent drying out of plant materials.

D. Reject plants when ball of earth surrounding roots has been cracked or broken preparatory to, or during, process of planting.

E. Reject plants when burlap, staves and ropes required for transplanting have been displaced prior to acceptance.

1.07 GUARANTEE

A. Provide one-year guarantee from date of plant material acceptance.

B. Replace plant materials found dead or not in a healthy growing condition. Plants shall exhibit at least 75% healthy branching and foliage, and be free of insect or disease damage. Replace plants during normal planting season.
C. Replacement: plant materials shall be of same size and species, with a new warranty commencing on date of replacement. The Owner shall be given a three day notice of installation of replacement plants to allow inspection of plant material.

1.08 INSPECTION FOR ACCEPTANCE

A. After the minimum thirty (30) day maintenance period, the Contractor shall request the Owner, in writing, for an inspection to determine whether the plant material is acceptable. If the plant material and workmanship are acceptable, written notice will be given by the Owner to the Contractor stating that the guarantee period begins from the date of the Certificate of Acceptance.

B. If a substantial number of plants are sickly and dead at the time of inspection, acceptance will not be granted, and the Contractor's responsibility for maintenance of all the plants shall be extended until replacements are made. All dead and unsatisfactory plants shall be promptly removed from the site. Replacements shall conform in all respects to the specification for new plants and shall be planted in the same manner.

PART 2—PRODUCTS

2.01 PLANT MATERIAL

A. The Contractor shall furnish and plant all plants shown on the drawings. Plants shall conform to measurements and species designated on plant list and standards as established in American Standard for Nursery Stock ANSI Z60.1-1990 or as most recently amended. No substitutions will be accepted, without prior approval. Such requests shall be made at least five days before planting. Requests shall list at least five major nursery sources contacted for confirmation of unavailability.

B. All plant material shall be nursery grown and shall be shapely, well-grown, healthy, sound and free of disease, insect pests, eggs or larvae, and shall have a well developed root system. All plants shall be typical of their species or variety and shall have a normal habit of growth. They shall conform to the trade classification of "heavy specimen".

C. All trees and shrubs shall be freshly dug; no heeled-in plants and no plants from cold storage will be accepted. Plants shall have been transplanted or root pruned at least once in the last 3 years. All plants shall be hardy under climatic conditions similar to those in the locality of the work. All plant materials shall be properly identified by name on legible, weatherproof labels securely attached thereto.

D. Container grown plants shall have sufficient roots to hold planting mix intact after removal from containers without being root-bound.
E. Plants that meet the measurements specified, but do not possess a normal balance between height and spread shall be rejected.

F. Plants shall not be pruned before delivery. Trees which have a damaged or crooked leader, or multiple leaders, will be rejected. Trees with abrasion of the bark, sunscalds, disfiguring knots or fresh cuts of limbs over 1-1/4 inches which have not completed calloused, will be rejected.

G. Certificates of inspection shall accompany the invoice for each shipment of plants as may be required by laws for transportation. File certificates with the construction manager prior to unloading of the material. Inspection at place of growth does not preclude rejection of the plants at the site.

H. Plant material which is to be planted after the specified seasons for planting shall be dug during the normal season for digging of the particular plant material and be stored and maintained in good health until planting. The Contractor shall pay all costs for maintaining plant material while it is being stored.

I. Plant List—If there is any discrepancy between quantities shown on the Plant List and work shown on the drawings, the Contractor shall supply the plants required to complete the work as shown on the Drawings. Where the size of a plant on the Plant List is a variation between a minimum and maximum dimension, the sizes of the plants furnished shall be equal to the average of the two dimensions. Where a single dimension is given, it shall be the minimum size of the plants to be furnished.

2.02 TOPSOIL

A. Topsoil shall conform to the requirements specified in Section 02300 Earthwork.

2.03 SOIL CONDITIONING MATERIALS

A. Apply conditioning materials in accordance with recommendations of testing laboratory.

B. Limestone for adjustment of soil pH shall be ground dolomitic limestone containing not less than 85 percent of total carbonated and shall be ground to such a fineness that 40 percent will pass through a 100-mesh sieve and 90 percent will pass through a 20-mesh sieve. Coarser material shall be acceptable provided specific rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve. The lime shall be uniform in composition, dry and free flowing. It shall be delivered to the site in original unopened containers, each bearing manufacturer's guaranteed analysis.

C. Commercial Fertilizer shall conform to State and Federal fertilizer laws. It shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted. At least 50 percent by weight
of the nitrogen contents of the fertilizer shall be derived from organic sources. A minimum of 35% of the nitrogen shall be water insoluble. Fertilizer shall contain not less than percentage of weight of ingredients as follows or as recommended by soil analysis:

<table>
<thead>
<tr>
<th></th>
<th>Deciduous (dry)</th>
<th>Evergreen (dry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trees and shrubs</td>
<td>10% 6% 4%</td>
<td>7% 7% 7%</td>
</tr>
<tr>
<td>(water soluble)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trees and shrubs</td>
<td>6% 19% 16%</td>
<td>21% 7% 7%</td>
</tr>
<tr>
<td>(water soluble)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Humus shall be natural humus, reed peat or sedge peat. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form and shall pass through a 1/2 inch mesh screen. According to the methods of testing of A.O.A.C., latest edition, the acidity range shall be approximately 5.5 pH to 7.0 pH and the organic content shall be not less than 60% as determined by drying at 105 degrees C. The minimum water absorbing ability shall be 200% by weight on an oven-dry basis.

E. Peat moss shall be composed of the partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue and other foreign matter and have an acidity range of 3.5 pH to 5.5 pH as determined in accordance with the methods of testing of A.O.A.C., latest edition. Its water absorbing ability shall be a minimum of 1,100% by weight on an oven-dry basis.

F. Manure shall be well-rotted, unleached stable manure not less than eight months and not more than two years old, free from sawdust, shavings, or refuse of any kind and shall not contain over 25% straw. The Contractor shall furnish information as to kind of disinfectant or chemicals, if any, that may have been used in storage of the manure.

G. Bone meal shall be fine ground, steam-cooked, packing house bone with a minimum analysis of 23% phosphoric acid and 1.0% of nitrogen.

H. Leaf mold shall be a highly organic dark brown to black spongy residue resulting from the well aerated composting of deciduous tree parts, free of plants and their roots, debris and other extraneous matter and shall be uncontaminated by foreign matter and substances harmful to plant growth. The organic matter shall not be less than 85% by weight as determined by the loss on ignition of oven-dried samples. Test samples shall be oven-dried to a constant weight at a temperature of 16 degrees C. The inorganic residue after ignition shall not be finer textured than 4% by weight passing the number 200 sieve with washing.

I. Mulch—Native shredded pine bark, 100 percent organic, having a moisture content not exceeding 40 percent, free of any disease, insects. The particles shall pass a 1-inch square mesh and be retained on a 1/8-inch square mesh.
2.04 PLANT BACKFILL MIXTURE

A. Plant backfill mixture shall consist of 75 percent in-situ topsoil and 25 percent peat moss or leaf mold by volume, thoroughly mixed together. In addition, mix in fertilizer, cow manure, and other additives as required by recommendations of the testing laboratory reports.

B. The plant backfill mixture shall have an acidity range of between 5.5 pH and 7.6 pH.

2.05 WATER

A. Water shall be furnished by the Contractor and shall be suitable for irrigation and free from ingredients harmful to plant life. Hose and other watering equipment required for the work shall be furnished by the Contractor.

2.06 SUPPORT MATERIALS

A. Wire for staking and guying shall be pliable annealed galvanized twisted steel wire, galvanized eyebolts and galvanized turn buckles of sufficient strength to withstand wind pressure.

B. Hose to encase wires and cables shall be new two-ply reinforced rubber garden hose not less than 1/2-inch in diameter, black in color.

C. Stakes shall be hardwood stakes and pointed at one end. Size and length as required for staking and guying.

D. Material for supporting trees shall be in accordance with the following schedule:

<table>
<thead>
<tr>
<th>Tree Size</th>
<th>Staking Material</th>
<th>Wire</th>
<th>Turnbuckle or Flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>2- to 3-1/2-inch caliper (deciduous)</td>
<td>2-inch by 2-inch hardwood stake (three stakes required)</td>
<td>1/8 inch diameter, single stranded wire</td>
<td>3-1/2 inches</td>
</tr>
<tr>
<td>3-1/2 to 6-inch caliper (deciduous)</td>
<td>6-inch ground anchor or deadman 6-inch diameter by 2 feet (three guys required)</td>
<td>3/16 inch diameter, triple stranded with cable</td>
<td>6 inches with flag</td>
</tr>
<tr>
<td>5- to 7-foot (evergreen)</td>
<td>2-inch by 3-inch by 3-foot hardwood stake, staining optional (three guys required)</td>
<td>1/8 inch diameter, single stranded wire</td>
<td>3-1/2 inches with flag</td>
</tr>
</tbody>
</table>
2.07 ANTI-DESICCANT

A. Anti-desiccant emulsion that will provide a protective film over plant surfaces, permeable enough to permit transpiration, delivered in containers with manufacturer's directions. Anti-desiccant shall be Wiltpruf, manufactured by Nursery Specialty Products, Inc., Stubbins Road, Groton Falls, New York, or approved equivalent. Apply according to manufacturer's recommendations.

PART 3—EXECUTION

3.01 PLANTING DATES

A. Plant within the following dates:

1. Evergreen trees and shrubs:
   Spring: April 1 - June 1
   Fall: September 1 - November 1

2. Deciduous trees and shrubs:
   Spring: April 1 - June 15
   Fall: October 1 - November 15

3. Planting shall be prohibited in frozen or muddy ground.

B. Special conditions may warrant a variance in the above dates. Contractor shall notify the Owner of the conditions and the proposed variance. Permission will be given if the variance is warranted.

C. Approximate planting dates schedule shall be furnished by Contractor to the Owner for approval. Material planted out-of-season shall be given extra care and attention by the Contractor. Out-of-season planting shall be entirely at the Contractor's risk.

3.02 EXCAVATION OF TREE PITS AND SHRUB BEDS

A. Stake out on the ground locations for trees and outlines of all beds. Obtain approval of the Owner before excavation.

B. If rock, utilities, tree roots or obstructions are encountered in the excavation of shrub beds and tree pits, alternate locations may be selected by the Owner.
C. Test drainage of plant beds and pits by filling with water twice in succession. Conditions permitting the retention of water for more than 24 hours shall be brought to attention of the Owner.

D. Notify the Owner in writing of all soil or drainage conditions which the Contractor considers detrimental to growth of plant material.

E. Excavate tree pits and shrub beds to depths required. Tree pits shall be circular in outline. Tree pits shall be three times wider than the root ball diameter.

### 3.03 PLANTING

A. Place plants in the center of the holes. Use planting mix to backfill plant pits. Place planting mix in layers not to exceed 8 inches.

B. Set the trunk flare of the plant slightly above the finish grade in the same relationship it was to the ground from which it was dug. Set plant plumb, turned to face best side of plant forward, and brace firmly in position until the planting mix has been tamped lightly around the ball and roots. When plant pits have been backfilled approximately two-thirds full, water thoroughly before installing remainder of the planting soil to eliminate air pockets. Cut ropes or wires from top two-thirds of ball after plant has been set. Cut away and remove all visible burlap wrapping from around root balls. Loosen surface soil of root ball and comb out any exposed roots. Remove synthetic wrap and slowly biogradable materials completely.

C. Form 3 inch deep saucers around tree pits and shrub beds.

D. Mulch all pits and beds to the required depth immediately after planting and first watering.

E. Water all plants immediately after planting. All plants shall be flooded with water twice within first 24 hours of planting.

### 3.04 TREE SUPPORT

A. Firmly stake or guy all trees immediately after planting. Plants shall stand plumb after staking or guying. Stakes shall be plumb and neat, and installed in accordance with the details shown on the Drawings.

### 3.05 PRUNING

A. Each tree and shrub shall be pruned in accordance with American Nurserymen Association standards to preserve the natural character of the plant.

B. Pruning shall include the following:

1. Remove all dead wood, suckers and broken or badly bruised branches. Never cut a leader.
2. Use only clean, sharp tools.

C. Apply anti-desiccant to foliage if conditions warrant.

### 3.06 CLEAN-UP

A. Soil or other material deposited on paved areas shall be promptly removed. Keep paved areas clean at all times.

B. Upon completion of planting, all excess stones, debris and soil shall be cleaned up and removed from the site.

C. Broom and hose clean all pavements.

### 3.07 MAINTENANCE AND PROTECTION OF PLANTINGS

A. Maintenance shall begin immediately after each plant is planted and shall continue until acceptance.

B. Maintenance shall include:

1. Pruning, watering, cultivating, weeding, mulching, tightening and repairing of stakes or guys, resetting plants to proper grades or upright position, restoration of the planting saucer and furnishing and applying sprays required to keep the planting free of insects and disease.

2. Protect planting areas and plants against trespassing and damage of all kinds for the duration of the maintenance period. If any plants become damaged or injured, they shall be treated or replaced as required.

3. All plantings shall be thoroughly saturated at least twice per week during maintenance period.

### 3.08 REJECTION AND REPLACEMENT

A. Promptly remove rejected plant material from site.

B. Replace as soon as planting conditions permit with plants of same species and of the required quality.

### 3.09 ONE YEAR GUARANTEE INSPECTION

A. One year after the date of acceptance, the Contractor, at the request of the Owner, shall conduct an inspection of the condition of the plantings. The Owner will provide a written report on the results of the inspection. The Contractor shall replace any dead or unhealthy plants at this time.
B. The Contractor shall remove tree wraps and tree support systems on nursery-grown plants at this time.

END OF SECTION 02930
SECTION 02931
ATHLETIC FIELDS

PART 1—GENERAL

1.01 GENERAL REQUIREMENTS

A. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 SCOPE OF WORK

A. Refer to the Drawings for the extent and details of this work.

B. The work of this Section consists of athletic field renovation, construction and related work, including replacement of turf in disturbed areas outside playing fields, as shown on the Drawings or required herein and includes, but is not limited to the following:

1. Stripping and disposing of existing athletic field turf
2. Stripping, screening and stockpiling existing loam
3. Grading and compaction of subgrade
4. Providing sand drainage blanket and trench material as required to complete the work
5. Providing soil amendments and thoroughly mixing with existing topsoil
6. Providing additional new topsoil from off-site sources as required to complete work for this Section
7. Spreading, compacting and laser grading all rootzone mix for athletic field construction
8. Providing irrigation components to meet performance specifications
9. Seeding and cultural maintenance of athletic fields and replaced turf areas outside of athletic fields

1.03 RELATED WORK

1. Section 02210 - SITE PREPARATION AND DEMOLITION
2. Section 02270 - EROSION CONTROL
3. Section 02300 – EARTHWORK
4. Section 02600 – STORM DRAINAGE SYSTEM
5. Section 02791 - INFIELD MIX
6. Section 02930 – PLANTING
1.04 MATERIAL TESTING

A. GENERAL

1. Certification of imported common fill/ordinary borrow/topsoil/or any other material will include representative sample analysis from each point of origin of backfill to be used on the site. The sample(s) shall be analyzed by a certified laboratory for total metals (EPA priority pollutant metals), volatile organic compounds (EPA method 8260), semi-volatile organic compounds (EPA method 8270), petroleum hydrocarbons (DEP VPH/EPH Method), and total PCBs and pesticides (EPA method 8081/8082). A physical sample of the material from each source equal to approximately 10 pounds of representative backfill which is a split of the sample submitted to the Contractor's laboratory will be provided to the Owner prior to analysis. Any material that is brought out to the site that is not consistent with the physical sample(s) provided to the Owner/Architect will be rejected at no cost to the Owner and removed at the Contractor's expense.

2. In the event that the Contractor obtains more than 1000 cubic yards of fill/topsoil from any single source, then the contractor shall perform additional testing for the parameters specified above at a frequency of one sample for every 1000 cubic yards of backfill/ topsoil imported onto the site.

B. ROOTZONE: Testing of amendments and rootzone mix shall be performed by an Approved Soil Testing Laboratory:

1. N.W. Hummel & Co.
   35 King Road
   Trumansburg, NY 14886
   (607) 387-5694

2. International Sports Turf Research Center
   1530 Kansas City Road, Suite 110
   Olathe, KA 66061
   (800) 362-8873

3. Turf Diagnostics & Design, Inc.
   310A North Winchester St.
   Olathe, KS 66062
   (913) 780-6725

4. University of Connecticut, College of Agriculture and Natural Resources, Connecticut Cooperative Extension Services
   W.B. Young Building, Room 231
   1376 Storrs Road, Unit 4134
   Storrs, Connecticut 06269-4134
   Phone: 860-486-9228
   Fax: 860-486-0264
   Email: extension@uconn.edu
C. The cost of all testing shall be borne by the Contractor.

1.05 SUBMITTALS

A. Rootzone Materials: Sample Authentication: The Owner or his Approved Representative must be present during the sampling and packaging of rootzone mix. Each sample shall consist of a sub-sample taken from a composite of samples taken from cross sections from the top, bottom, and sides of the stockpile. A one-gallon sample of material in an appropriately labeled and sealed plastic bag or container shall be packaged and sent to an Approved Soil Testing Laboratory.

1. Existing Topsoil: A material test report of the existing topsoil is included in the Project Manual following this Section.

B. Sand: The Contractor shall submit a one gallon sample from each 500 cubic yard lot of the sand he intends to bring onto the site to amend the existing topsoil as a component of the rootzone mix to an Approved Soil Testing Laboratory.

1. The sand must be evaluated using ASTM Test Methods for putting green and sports turf rootzones by an Approved Soil Testing Laboratory.
2. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.
3. All reports shall be submitted to the Owner for approval.

C. Drainage Sand: The Contractor shall submit a one gallon sample from each 500 cubic yard lot of the sand he intends to bring onto the site for use in the drainage blanket and trenches to an Approved Soil Testing Laboratory.

1. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.
2. All reports shall be submitted to the Owner for approval.

D. Organic Matter: The Contractor shall submit a one gallon sample from each 500 cubic yard lot of the organic matter he intends to bring to the site to amend the existing topsoil as a component of the rootzone mix to an Approved Soil Testing Laboratory.

1. The organic matter must be evaluated using ASTM Test Methods for putting green and sports turf rootzones by an Approved Soil Testing Laboratory.
2. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.
3. All reports shall be submitted to the Owner for approval.

E. Topsoil Analyses: The Contractor shall submit a one gallon sample from each 500 cubic yard lot of the topsoil he intends to bring onto the site to mix as a component of the rootzone mix to the Approved Soil Testing Laboratory.
1. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish particular agricultural, horticultural, or sports turf management objectives noted.

2. The topsoil must be evaluated using ASTM Test Methods for putting green and sports turf rootzones by an Approved Soil Testing Laboratory.

3. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.

4. All reports shall be submitted to the Owner for approval.

F. Rootzone Mix Analysis:

1. The Contractor shall submit a one-gallon sample from each 500 cubic yard lot of the rootzone mix he intends to spread at the site to the Approved Soil Testing Laboratory.

2. The rootzone mix must be evaluated using ASTM Test Methods for putting green and sports turf rootzones by an Approved Soil Testing Laboratory.

3. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.

4. All reports shall be submitted to the Owner for approval.

G. Provide compaction test results for subgrade and rootzone mix for approval by Owner. The cost of all testing shall be borne by the Contractor.

H. Submit grass seed mix and name of supplier for approval.

I. Submit product information on soil additives for approval.

J. Submit product information on field construction, sod stripping and laser grading vehicles and equipment.

1.06 QUALITY ASSUREANCE

A. All seed shall comply with all Federal, State and local laws and regulations requiring inspection for plant disease and insect control.

B. Experience: Corrective Athletic Field Renovation and new field construction shall be performed by an experienced specialty firm which shall have renovated or constructed at least 5 outdoor athletic fields of 30,000 s.f. or greater of the type and installation process herein specified within the last 3-year period. Contractor shall submit references, with contract name, address and telephone number to enable such data to be validated at the time of the submission of bids.

C. Work under this Section shall be completed by skilled workers who are completely familiar with the specific requirements and methods needed for the proper completion of the work of this Section.
1.07 PRODUCT HANDLING

A. Delivery and storage:

1. Deliver all items to the job site in their original containers with all labels intact and legible at time of Owner's inspection.
2. Immediately remove from the site all materials that are not true to name, and all materials that do not comply with the specified requirements.
3. Use all means necessary to protect materials before, during and after installation, and to protect the work and materials of all other trades.
4. Repair and Replacement: in the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner and at no additional cost to the Owner.
5. Contamination: Immediately remove from the site all materials that have been contaminated. In the case of contamination of stockpiled items, remove entire stockpile from site immediately.

1.08 JOB CONDITIONS

A. Utilities: Determine location of underground utilities and perform work in a manner that will avoid possible damage. Hand excavate as required. Maintain grade stakes set by others until all parties concerned mutually agree upon removal.

B. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Owner before proceeding.

PART 2—PRODUCTS

2.01 ROOTZONE MIX

A. The Rootzone Mix shall consist of 4 parts topsoil, 1 part sand, and 3 parts organic matter by volume.

1. Topsoil:

a. Topsoil under the base bid shall consist new topsoil furnish and installed from an off-site source that meets the requirements of these specifications. Topsoil under Alternate #5 shall consist of the existing stripped, screened and amended topsoil and/or additional topsoil.

b. For additional requirements associated with the amended topsoil see Appendix A for existing soil condition reports and amending requirements.

c. Additional topsoil shall meet the required depths and grades shown on the Drawings, the Contractor shall import topsoil meeting the following criteria at no cost to the Owner. Topsoil shall be natural, fertile, friable.
loam or sandy loam typical of cultivated topsoils of the locality, containing not less than 3.5% or more than 8% by weight, of decayed organic matter (humus), as determined by ASTM F-1647. Topsoil shall be taken from a well-drained, arable site, free of sub-soil, large stones, earth clods, sticks, stumps, clay lumps, roots or other objectionable, extraneous matter or debris. Topsoil shall also be free of Quackgrass rhizomes, *Agropyron Repens*, and the nut-like tubers of Nutgrass, *Cyperus Esculentus*, and all other primary noxious weeds. Topsoil shall not have a pH factor of less than 6.0 or greater than 7.0. Topsoil shall not be delivered or used for planting while in a frozen or muddy condition. Topsoil shall conform to the particle size distribution with a maximum three eighths (3/8") inches largest dimension, as determined by pipette method in compliance with ASTM F-1632:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand</td>
<td>40-60%</td>
<td></td>
</tr>
<tr>
<td>Silt</td>
<td>30-40%</td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>5-20%</td>
<td></td>
</tr>
</tbody>
</table>

2. Sand:

a. Sand material for drainage blanket material shall meet the following criteria

<table>
<thead>
<tr>
<th>Seive (mm)</th>
<th>Percent retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;2 mm</td>
<td>0</td>
</tr>
<tr>
<td>1-2 mm</td>
<td>0-10</td>
</tr>
<tr>
<td>0.5-1 mm</td>
<td>5-30</td>
</tr>
<tr>
<td>40-90</td>
<td>5-25</td>
</tr>
</tbody>
</table>

b. Sand for soil amendment and/or rootzone mix shall be concrete sand meeting the requirements of ASTM C-33 with the following addenda: The sand shall have a fineness modulus of 2.8 to 3.2 and a coefficient of uniformity of less than 4.

3. Organic Matter:

a. Organic matter for soil amendment and/or rootzone mix shall be Agresoil or equivalent commercially available compost mix aged for one (1) year in an in-vessel system, having a total ash content of no more than 40%, and should be proven to be non-phytotoxic.

B. After approval of the rootzone components and mix, a one gallon sample of the blended mix for every 500 tons of mix shall be submitted for testing, to include particle size analysis, and organic matter content. Physical performance testing may be required if the Owner’s Testing Agent determines that there are discrepancies in the samples.
C. Upon approval of each of sample, the corresponding 500 cubic yard lot of rootzone mix shall be released for delivery to and placement on the field site as described in PART 3: EXECUTION.

**2.02 LIME**

A. Lime shall be an approved agricultural limestone containing no less than fifty (50%) percent of total carbonates and twenty-five (25%) percent total magnesium with a neutralizing value of at least one hundred (100%) percent. The material shall be ground to such a fineness that forty (40%) percent will pass through a Number 100 U.S. Standard Sieve, and ninety eight (98%) percent will pass through a Number 20 U.S. Standard Sieve. The lime shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any lime which becomes caked or otherwise damaged making it unsuitable for use will be rejected.

**2.03 FERTILIZER**

A. Shall be determined based on soil test conducted by an Approved Soil Testing Laboratory.

**2.04 WATER**

A. A water source exists on site that feeds an existing irrigation system to be removed. Contractor to coordinate start up of a new irrigation system with Owner. If water supply is disrupted or new irrigation system is damaged by Contractor subsequent to seeding, it will be the responsibility of the Contractor to repair and reconnect the irrigation system immediately or provide adequate water from off site sources to insure healthy and vigorous turf growth.

**2.05 SEED**

A. Seed mix shall be a blend containing 70% Kentucky bluegrass and 30% perennial ryegrass. The Kentucky bluegrass component shall include at least three Kentucky bluegrass cultivars in approximately equal proportions. At least 70% of the Kentucky bluegrass portion of the seed blend shall be at least two of the following varieties: Able I, Aspen, Banff, Blacksburg, Challenger, Classic, Eclipse, Estate, Midnight, Princeton (P-104), Ram I, Touchdown, or Trenton. The perennial ryegrass component of the blend shall include at least two varieties of perennial ryegrass. Any variety substitutions or deviations from these specifications must be approved by the Owner.

**2.06 SOD**

A. **Composition:** Nursery grown sod composed of grasses grown from the following seed mixture:
<table>
<thead>
<tr>
<th>Grass Species</th>
<th>Proportion of Seed by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chewing Fescue</td>
<td>25%</td>
</tr>
<tr>
<td>Creeping Fescue</td>
<td>25%</td>
</tr>
<tr>
<td>American Kentucky Bluegrass</td>
<td>20%</td>
</tr>
<tr>
<td>Touchdown Kentucky Bluegrass</td>
<td>15%</td>
</tr>
<tr>
<td>Challenger Kentucky Bluegrass</td>
<td>15%</td>
</tr>
</tbody>
</table>

B. **Characteristics**—Sod shall be well-rooted turf, free from weeds, insect pests, and disease. It shall be machine-cut to a uniform soil thickness of 3/4-inch plus or minus, and to industry standard length and widths. Sod shall be harvested and replanted within 36 hours. Soil on sod pads shall be kept moist at all times.

2.07 **EQUIPMENT**

A. Tractors and other Vehicles:

1. All vehicles trafficking the subgrade, rootzone or finished athletic field shall be tracked vehicles or be equipped with special flotation tires designed to minimize compaction of the athletic field subgrade and surface.

2. Deep Tine Aerator:

a. The Deep Tine Aerator must be hitch mounted (with no hydraulic dolly wheel lift assist) and PTO operated. The unit shall also contain the following equipment:

b. Variable speed gearbox on unit to adjust walking action of tines
c. Filled rear roller to reduce surface disruption and shorten recovery time
d. Adjustable shock arms to control shattering effect

B. Laser Grader:

1. The finished athletic field surface shall be graded to the specified tolerances with a remote laser controlled hydraulically operated grading apparatus with self correcting blade not exceeding 8 feet in width.

PART 3—EXECUTION

3.01 **SUBGRADE PREPARATION**

A. Existing athletic field sod is to be stripped and all organics are to be disposed or stockpiled if acceptable for reuse.

B. Strip, screen and stockpile existing loam in an area approved by the Owner.

C. Place surveyor’s grade stakes in 25’ grid pattern over the field surface and mark each with the appropriate finish grades for the subgrade and rootzone mix.
D. The slope of the subgrade shall conform to general slope of the finish grade as shown on the Drawings with a tolerance of plus or minus 1/2 inch. Confirm that subgrade slopes consistently without settlement or pockets promoting the collection of water.

E. Compaction of subgrade: Operate the irrigation system one full cycle or until water is known to be draining through the subgrade or drain system. Fill in low spots with subgrade material and water in thoroughly. The process shall be repeated as necessary to bring the subgrade to within the tolerances described. Subgrade compaction shall not exceed the bulk density as performed in laboratory testing.

3.02 SEED BED PREPARATION

A. Notify Owner 48 hours prior to spreading rootzone mix for approval of subsurface grades. The slope of the subgrade shall conform to or be slightly greater than the general slope of the finish grade.

B. Obtain the written approval of the Owner for finish grade of subgrade prior to spreading of rootzone mix. By spreading of rootzone mix prior to receiving the written approval of the Owner, the Contractor assumes acceptance of the subgrade condition and the responsibility to repair deficiencies resulting from incorrect grades at his sole cost.

C. Loosen and mix subgrade material to a minimum depth of six inches (6") deep. Remove stones over two (2") inches diameter, sticks and rubbish. Move no heavy objects over athletic field area after preparing subgrade surface.

D. Apply the rootzone mix at athletic fields in lifts not to exceed 6 inches over the completed drainage and adjusted irrigation systems to the depths and finished grades shown on the Drawings. Material shall be installed in a moist condition and shall be installed with a tolerance of 1/4 inch in 25 feet in either direction plus or minus of elevations shown on the drawings when compacted. Any over compacted conditions will require immediate action by the Contractor to satisfy the intent of the specifications.

E. Compaction of rootzone mix: Operate the irrigation system one full cycle or until water is known to be draining through the subsurface. Fill in low spots to finish grade with rootzone mix as appropriate and water in thoroughly. The process shall be repeated as necessary to bring the field to finish grade within the tolerances described. Finish grades shall be verified by survey instruments, recorded and provided to the Owner for review and approval. If a light roller is used to obtain field grade, the surface shall be scarified before application of seed. Field compaction shall not exceed the bulk density as performed in laboratory testing.

F. Soil pH: The amount of lime or sulfur required to change pH should be based on a soil test. Spread ground limestone as recommended by soil testing laboratory evenly over the athletic field surface. Do not exceed one hundred fifty (150) pounds of lime per one thousand (1,000) square feet. When using pelleted limestone materials, apply at the same rate as for ground limestone for rapid pH change and at one half (1/2) the rate for normal applications. Do not apply sulfur during mid-summer stress period,
and do not exceed five (5) pounds per one thousand (1,000) square feet per year. On sandy soils, apply sulphur as a split application.

G. Obtain the written approval of the Owner for finish grade of athletic field surfaces prior to seeding operations. By seeding prior to receiving the written approval of the Owner, the Contractor assumes acceptance of the finish grade condition and the responsibility to repair deficiencies resulting from incorrect grades at his sole cost.

H. Prior to seeding, apply a commercial turfgrass starter fertilizer at a rate determined by an appropriate soil testing facility.

3.03 SEEDING

A. Before seed is sown, scarify soil and rake until surface is smooth, friable, and of uniformly fine texture. Broadcast seed evenly at 4 pounds per one thousand (1,000) square feet, lightly rake, roll with two hundred (200) pound roller and water with fine spray. Method of seeding may be varied at the discretion of the Contractor with the written approval of the Owner.

B. Seeding shall be done between April 1 to June 1, or August 15 to October 15, except as otherwise authorized in writing by the Owner.

C. Seeding shall not be done during windy or inclement weather.

3.04 SODDING

A. Sod bed preparation to be the same as Section 3.02 Seed Bed Preparation

B. Before sod is laid, and after all grading is complete, the loam bed shall be lightly raked with a fine toothed harrow or hand rake. The loam bed shall be moist, but not wet, prior to laying the sod. Sod shall not be laid on soil that is dry and powdery.

C. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to, and tightly against, each other. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to ensure that the sod is not stretched or overlapped, and that all joints are butted tight to prevent voids. The Contractor shall rake sufficient screened loam into the sod to fill all small voids. All large voids shall be filled with sod plugs.

D. Sod shall be laid with staggered joints and secured by pegging on slopes greater than 25%.

E. Sod shall be placed from April 1 to June 1 and August 15 to October 15, provided that the ground is not frozen.

F. Sod shall be harvested, delivered, and transplanted onto the site within a period of 36 hours.

G. Sod shall be watered immediately, during and after installation, to a sufficient depth to thoroughly wet the underside of the new sod and the soil immediately below. The
Contractor shall have adequate water available on the site prior to, and during, installation of the sod.

3.05 FERTILIZING

A. Contractor to have the rootzone mix tested for soil fertility by an Approved Soil Testing Laboratory, and a complete fertilization program will be recommended by the testing laboratory and Owner for the initial fertilization.

3.06 INSPECTION AND ACCEPTANCE

A. The Owner shall inspect the athletic field turf for acceptance upon written request by the Contractor. The request shall be received at least ten (10) days before the anticipated date of inspection.

B. Final acceptance will not be granted until all seeded areas are in satisfactory condition.

C. Contractor to provide a minimum of one (1) mowing with sharp, reel type mowing units one day prior to the Owner anticipated date of inspection. Mowing shall not remove more than one third of the grass blade.

D. If the seeded turf is in satisfactory condition, the Contractor's care and maintenance responsibilities will end. If the seeded turf is unsatisfactory, the Contractor shall replace the turf until an acceptable stand of grass is achieved. The Contractor shall fertilize the turf if, in the Owner's opinion, it is needed in order to achieve an acceptable athletic field.

3.07 TURF WATERING

A. The Contractor shall perform irrigation in a manner that promotes the health, growth, color and appearance of cultivated vegetation and that complies with all Federal, State, and local water agencies and authorities directives. The Contractor shall be responsible to prevent over watering, water run-off, erosion, and ponding due to excessive quantities or rate of application. The Contractor shall abide by state, local or other water conservation regulations or restrictions in force during the establishment period.

B. The irrigation system shall be designed and/or executed to maintain the upper four inches (4”) of topsoil layer in a thoroughly moistened but not waterlogged condition during the duration of growing season from April 15 to October 15. As directed by the Owner, Contractor shall coordinate the timing of irrigation system so as not to interfere with field usage schedule.
A. Absolutely no debris may be left on the site. Excavated material shall be removed as directed. Repair any damage to site or structures to restore them to their original condition, as directed by the Owner, at no cost to the Owner.

END OF SECTION 02931
SECTION 02935
LANDSCAPE MAINTENANCE

PART 1—GENERAL

1.01 GENERAL REQUIREMENTS

A. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 SCOPE OF WORK

A. Refer to the Drawings for the extent and details of this work.

B. The work of this Section consists of a one-year maintenance contract to maintain newly installed and/or renovated athletic fields, non-athletic field turf areas, tree plantings and related work as shown on the Drawings or required herein and includes, but is not limited to the following:

1. Watering
2. Irrigation equipment cleaning
3. Drainage system maintenance
4. Weekly mowing during the growing season
5. Edging
6. Overseeding
7. Turf aeration
8. Fertilizing
9. Weeding
10. Pruning
11. Tree stake and guy adjustment
12. Pesticide application
13. Maintenance of security fencing
14. Policing -- Leaf, trash and debris pick-up

Work will include all areas inside or outside the limits of the construction that are disturbed by the Contractor's operations. Note that some areas of this project do not include an irrigation system and will require hand watering particularly on the margins of the athletic fields. It is the Owner’s intention to keep newly installed fields out of play for the one-year establishment period following installation.
1.03 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)


ANSI Z88.2(1992) Respiratory Protection

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910-SUBPART ZToxic and Hazardous Substances

1.04 DEFINITIONS

A. Pesticide

Any substance or mixture of substances, including biological control agents, that may prevent, destroy, repel, or mitigate pests and are specifically labeled for use by the U.S. Environmental Protection Agency (EPA). Also, any substance used as a plant regulator, defoliant, disinfectant, or biocide. Examples of pesticides include fumigants, herbicides, insecticides, fungicides, nematicides, molluscicides and rodenticides.

B. Stand of Turf

100 percent ground cover of the established species.

C. Tree Plantings

Area containing tree plantings.

1.05 RELATED SECTIONS

Section 02810 SITE IRRIGATION SYSTEM applies to this section for installation of irrigation equipment requirements, with additions and modifications herein.

Section 02922 SEEDING applies to this section for installation of seed requirements, with additions and modifications herein.

Section 02930 PLANTINGS applies to this section for installation of trees, shrubs, ground cover, vines, and perennials, with additions and modifications herein.
1.06 SUBMITTALS

The following shall be submitted to the Owner in accordance with submittal procedures below:

SD-01 Preconstruction Submittals

Pesticides

Provide list of pesticides proposed for use on the appropriate pesticides purchase and use approval request form.

SD-03 Product Data

Fertilizer; G

Pesticides; G

Provide pesticide label and Material Safety Data Sheet for each proposed pesticide.

Include physical characteristics, application instructions and recommendations.

SD-07 Certificates

Pesticide applicator's certification

Maintenance inspection report

Plant quantities; G

SD-08 Manufacturer's Instructions

Pesticides

SD-11 Closeout Submittals

Pesticides

Tree, staking and guyng removal

Provide list of pesticides used on the project; submit on the appropriate Pest Management Record Form.

1.07 DELIVERY, STORAGE AND HANDLING

A. Delivery

1. Fertilizer Delivery

Deliver to the site in original containers bearing manufacturer's chemical analysis, name, trade name, or trademark, and indication of conformance to state and federal
laws. Instead of containers, fertilizer may be furnished in bulk with a certificate indicating the above information.

2. Pesticide Delivery

Deliver to the site in original containers with legible manufacturer's label attached.

B. Storage

1. Fertilizer, Lime, Iron, and Mulch Storage

Material shall be stored in designated areas. Lime and fertilizer shall be stored in cool, dry locations away from contaminants.

2. Pesticides and Antidessicants Storage

Do not store with fertilizers or other landscape maintenance materials. Store herbicides "downwind," relative to the airflow in the storage building, from other pesticides, and provide physical separation between herbicides and other pesticides.

C. Handling

Do not drop or dump materials from vehicles.

PART 2—PRODUCTS

2.01 POST-PLANT FERTILIZER

A. Granular Fertilizer

Organic, granular controlled release fertilizer containing the following minimum percentages, by weight, of plant food nutrients:

20 percent available nitrogen
20 percent available phosphorus
10 percent available potassium

2.02 WATER

Source of water shall be approved by the Owner, and be of suitable quality for irrigation.

2.03 MULCHES TOPDRESSING

Free from noxious weeds, mold, or other deleterious materials.

A. Organic Mulch Materials- See 02930 PLANTINGS
2.04 PESTICIDES

Fumigant, Herbicide, Insecticide, Fungicide, and Rodenticide: EPA registered and approved. Furnish for preemergence and postemergence application for crabgrass control and broadleaf weed control. Comply with Federal Insecticide, Fungicide, and Rodenticide Act (Title 7 U.S.C. Section 136) for requirements on contractor's licensing, certification, and record keeping. Contractor to keep records of all pesticide applications and forward data monthly to the Owner. Submit record keeping format to Owner for approval. Contact the Owner’s Installation Pest Management Coordinator prior to starting work.

PART 3—EXECUTION

3.01 EXTENT OF WORK

Provide landscape construction maintenance to include irrigation equipment cleaning and adjustments, mowing, edging, overseeding, aeration, fertilizing, watering, weeding, pruning, stake and guy adjusting, and pesticide application for all newly installed turf and planted areas, unless indicated otherwise, and at all areas inside or outside the limits of the construction that are disturbed by the Contractor's operations. Note that some areas of this project do not include an irrigation system and will require hand watering.

A. Policing

The Contractor shall police all landscaped areas. Policing includes removal of leaves, branches and limbs regardless of length or diameter, dead vegetation, paper, trash, cigarette butts, garbage, rocks or other debris. Collected debris shall be promptly removed and disposed of at an approved disposal site.

B. Drainage System Maintenance

The Contractor shall remove all obstructions from surface and subsurface drain lines to allow water to flow unrestricted in swales, gutters, catch basins, storm drain curb inlets, and yard drains. Remove grates and clear debris in catch basins. Open drainage channels are to be maintained free of all debris and vegetation at all times. Edges of these channels shall be clear of any encroachment by vegetation.

3.02 IRRIGATION ESTABLISHMENT PERIOD

The irrigation establishment period will commence on the date that inspection by the Owner shows that the new repaired irrigation equipment furnished under this contract have been satisfactorily installed and is functional and shall continue for a period of 365 days. Refer to specification section 02810.

3.03 TURF ESTABLISHMENT PERIOD

Turf establishment period will commence on the date that inspection by the Owner shows that the new turf furnished under this contract has been satisfactorily installed to a 95 percent stand of coverage. The establishment period shall continue for a period of 365 days.
A. Frequency of Maintenance

Begin maintenance immediately after turf has been installed. Inspect turf areas once a week during the installation and establishment period and perform needed maintenance promptly.

B. Promotion of Turf Growth

Turf shall be maintained in a manner that promotes proper health, growth, rich natural green color, and neat uniform manicured appearance, free of bare areas, ruts, holes, weeds, pests, dead vegetation, debris, and unwanted vegetation that present an unsightly appearance. Mow, remove excess clippings, eradicate weeds, water, fertilize, overseed, aerate, topdress and perform other operations necessary to promote turf growth.

C. Mowing

Turf shall be mowed at a uniform finished height. Mow turfed areas to an average height of 3 inches when average height of grass becomes 4 inches for spring/summer maintenance and to an average height of 3 inches when the average height of grass reaches 4 inches for fall and winter maintenance. The height of turf is measured from the soil. Mowing of turf shall be performed in a manner that prevents scalping, rutting, bruising, uneven and rough cutting. Prior to mowing, all rubbish, debris, trash, leaves, rocks, paper, and limbs or branches on a turf area shall be picked up and disposed. Adjacent paved areas shall be swept/vacuumed clean.

D. Turf Edging and Trimming

Perimeter of sidewalks, driveways, curbs, and other paved surfaces shall be edged. Uniformly edge these areas to prevent encroachment of vegetation onto paved surfaces and to provide a clear cut division line between planter beds, turf, and ground cover. Edging is to be accomplished in a manner that prevents scalping, rutting, bruising, uneven and rough cutting. Edging shall be performed on the same day that turf is mowed. Use of string line trimmers is permitted in "soft" areas such as an edge between turfgrass and a planted area. Care shall be exercised to avoid damage to any plant materials, structures, and other landscape features.

Trimming around trees, fences, poles, walls, irrigation valve boxes and other similar objects is to be accomplished to match the height and appearance of surrounding mowed turf growth. Trimming shall be performed on the same day the turf's mowed. Care shall be exercised to avoid "Girdling" trees located in turf areas. The use of protective tree collars on trees in turf areas may be utilized as a temporary means to avoid injury to tree trunks. At the end of the plant establishment period Contractor will be responsible for removing all protective tree collars.

E. Turf Post-Fertilizer Application

Apply fertilizer in a manner that promotes health, growth, vigor, color and appearance of cultivated turf areas. The method of application, fertilizer type and frequencies shall be determined by the laboratory soil analysis results the requirements of the particular turf.
species. Fertilizer shall be applied by approved methods in accordance with the manufacturer's recommendations.

F. Turf Watering

The Contractor shall perform irrigation in a manner that promotes the health, growth, color and appearance of cultivated vegetation and that complies with all Federal, State, and local water agencies and authorities’ directives. The Contractor shall be responsible to prevent over watering, water run-off, erosion, and ponding due to excessive quantities or rate of application. The Contractor shall abide by state, local or other water conservation regulations or restrictions in force during the establishment period.

The irrigation system shall be designed and/or executed to maintain the upper four inches (4”) of topsoil layer in a thoroughly moistened but not waterlogged condition during the duration of growing season from April 15 to October 15. As directed by the Owner, Contractor shall coordinate the timing of irrigation system so as not to interfere with field usage schedule.

G. Turf Clearance Area

Trees located in turf areas shall be maintained with a growth free clearance of 18 inches from the tree trunk base. The use of mechanical weed whips to accomplish the turf growth free bed area is prohibited.

H. Replanting

Replant in accordance with Section 02921 SEEDING, Section 02922 SODDING and within specified planting dates areas which do not have a satisfactory stand of turf.

I. Final Inspection and Acceptance

Final inspection will be make upon written request from the Contractor to the Owner at least 10 days prior to the last day of the turf establishment period. Final acceptance will be based upon a satisfactory stand of turf.
The tree planting establishment period will commence on the date that inspection by the Contracting Officer shows that the new and transplanted plants furnished under this contract have been satisfactorily installed and shall continue for a period of 365 days.

A. Frequency of Maintenance

Begin maintenance immediately after plants have been installed. Inspect tree plantings at least once a week during the installation and establishment period and perform needed maintenance promptly.

B. Promotion of Tree Growth and Vigor

Water, prune, fertilize, mulch, adjust stakes, guys and turnbuckles, eradicate weeds and perform other operations necessary to promote plant growth, and vigor.

C. Tree Planting Maintenance

Tree earth mound water basins shall be weeded, fertilized, irrigated, kept pest free, turf free, pruned, and mulch levels maintained. A definite break shall be maintained between turf areas and tree saucers. Note that some areas of this project do not include an irrigation system and will require hand watering.

1. Tree Maintenance

Tree maintenance shall include adjustment of stakes, ties, guy supports and turnbuckles, watering, fertilizing, pest control, mulching, pruning for health and safety and fall leaf cleanup. Stakes, ties, guy supports and turnbuckles shall be inspected and adjusted to avoid girdling and promote natural development. All trees within the project boundaries, regardless of caliper, shall be selectively pruned for safety and health reasons. These include but are not limited to removal of dead and broken branches and correction of structural defects. Prune trees according to their natural growth characteristics leaving trees well shaped and balanced. Pruning of all trees including palm trees shall be accomplished by or in the presence of a certified member of the International Society of Arboriculture and in accordance with ANSI Z133.1. All pruning debris generated shall be disposed of in a proper manner.

D. Removal of Dying or Dead Trees

Remove dead and dying trees and provide new trees immediately upon commencement of the specified planting season, and replace stakes, guys, mulch and eroded earth mound water basins. No additional tree establishment period will be required for replacement trees beyond the original warranty period. A tree shall be considered dying or dead when the main leader has died back, or a minimum of 20 percent of the crown has died. This condition shall be determined by scraping on a branch an area 2 mm1/16 inch square, maximum, to determine the cause for dying tree and shall provide recommendations for replacement. The Contractor shall determine the cause for dying tree and provide recommendations for replacement.
E. Tracking of Unhealthy Trees

Note trees not in healthy growing condition, as determined by the Owner, and as soon as seasonal conditions permit, remove and replace with trees of the same species and sizes as originally specified. Install replacement trees in accordance with Section 02930 PLANTINGS.

F. Final Inspection

Final inspection will be made upon written request from the Contractor at least 10 days prior to the last day of the establishment period. Final inspection will be based on the following:

1. Total trees on Site
   Trees have been accepted and required number of replacements have been installed.
2. Mulching and Weeding
   Tree earth mound water basins are properly mulched and free of weeds.
3. Tree Supports
   Stakes guys and turnbuckles are in good condition.
4. Remedial Work
   Remedial measures directed by the Contracting Officer to ensure tree survival and promote healthy growth have been completed.

3.05 PESTICIDE APPLICATION

Use pesticides when required to eliminate plant diseases and harmful insects or insect eggs from plant materials. The Contractor shall furnish all labor, supervision, tools, materials, equipment, and transportation necessary to provide Pest Control Services as required.

A. State Licensing

The Contractor shall be licensed by the State to provide pest control in the categories in which work will be performed.

B. Certified and Licensed Applicators

All pesticide applications shall be performed by individuals who are state licensed or certified in the appropriate categories for the type of pest control to be performed. The applicator must be capable of reading, understanding and executing all of the requirements and recommendations outlined on the manufacturer's label. All pesticides must be used in accordance with the Federal, state, local, and installation laws, including laws pertaining to application adjacent to inland wetlands, publications, and any requirements identified in attachments. All pesticides shall be procured, processed, handled, and applied in strict accordance with the manufacturer's label. All pesticides shall be registered with the U.S. Environmental Protection Agency and State in which they will be used.

C. Pesticide Use Inspections

Pesticide applications will be inspected by the Owner’s designated Pest Management Coordinator or trained Pest Management Quality Assurance Evaluator. The Contractor shall
notify the Owner immediately, by telephone, of any inspection visits by any Federal or State enforcement officials.

D. Pesticide Approval

The Contractor shall submit to the Owner a list of pesticides "proposed for use" prior to initiation of work on the correct submission form. The Owner must approve the pesticides proposed before they can be used. Copies of the pesticide complete label and Material Safety Data Sheet (MSDS) for each pesticide proposed for use must be included. Copies of the State business license as an applicator of pesticides and the pesticide applicator's certification information must also be attached. If the Contractor wishes to use a pesticide not currently on the "list" (previously submitted), the new pesticide must be submitted to the Owner for approval on the correct submission form. Once pesticides are approved by the Owner, they can be used throughout the course of the contract provided that registration is not revoked by the EPA or the State. The government reserves the right to remove any pesticide from use at anytime.

E. Application and Reporting Procedure

Notify the Contracting Officer 24 hours before application. Apply pesticides in accordance with EPA label restrictions and recommendations and federal and state laws. Make daily reports to the Owner stating areas treated with each chemical, the quantity applied, and spray mixture or formulation used. The Contractor shall maintain a label book of pesticides used, including all appropriate Material Safety Data Sheets (MSDS), and have it readily available at all times for inspection. Pesticides shall always be stored in original containers having EPA-registered labels attached or in service containers that conform to all federal, state, or local regulations regarding containers for pesticide storage.

F. Application Safety Precautions

Apply in well ventilated areas. Avoid inhalation, injection, or spilling on clothing or skin. Wear personal protective equipment (PPE) that meets or exceeds the requirements indicated by the manufacturer's pesticide label. Do not expose personnel to pesticides exceeding the exposure levels recommended in the most stringent of the following: OSHA, 29 CFR 1910-SUBPART Z, or the manufacturer's material safety data sheet. If excessive exposures are unavoidable, use respirators approved by the National Institute for Occupational Safety and Health for protection from pesticides. Conform to the selection and usage guidance in ANSI Z88.2. Ensure that application sites are clearly posted with re-entry intervals as required by the manufacturer's pesticide label.

G. Hydraulic Equipment

For liquid application of chemicals, hydraulic equipment shall have leakproof tanks and a positive agitation method. Calibrate and meter equipment so that application of chemicals in specified amounts can be determined. Provide equipment with gauges and valves capable of maintaining constant application pressures. Use application equipment appropriate for the nature and size of work, that is clean, calibrated, and in proper operational condition. Never leave equipment unattended during filling, and during application usage.

H. Personnel Injury and Property Damage Prevention
Apply in a manner to prevent injury to personnel, and damage to property, from either direct spray, or drifting of chemicals both on and off the Owner’s property.

I. Pesticide Disposal

The Contractor shall dispose of all excess pesticides, pesticide rinse water, empty pesticide containers, and any pesticide contaminated article in accordance with the label, applicable State and Federal regulations.

J. Pesticide Spills, Clean Up and Decontamination

The Contractor shall be responsible for proper reporting, containment, clean up and decontamination of pesticide spills, as required by EPA and State Laws and Regulations. All spills shall be immediately reported to the Owner.

3.06 FIELD QUALITY CONTROL

A. Maintenance Inspection Report

Provide maintenance inspection report to assure that landscape maintenance is being performed in accordance with the specifications and in the best interest of plant growth and survivability. Site observations shall be documented at the start of the establishment period, then quarterly following the start, and at the end of establishment period. Results of site observation visits shall be submitted to the Owner within 7 calendar days of each site observation visit.

B. Plant Quantities

The Contractor shall provide Owner with the tree quantities. In addition, provide total exterior area of hardscape and turf.

C. Tree Staking and Guying Removal.

The Contractor shall provide a certified letter that all stakes and guys are removed from all project trees at the end of the establishment period.

END OF SECTION 02935
SECTION 03301
SITE CAST-IN-PLACE CONCRETE

PART 1—GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for concrete cast-in-place on the site.

B. The work of includes cast-in-place concrete pavement, bases, foundations, structures and thrust blocks.

1.02 RELATED SECTIONS

A. Sections which directly relate to the work of this Section include:

   Section 02600 – STORM DRAINAGE SYSTEM
   Section 02800 – SITE IMPROVEMENTS
   Section 02820 – CHAIN LINK FENCES

1.03 REFERENCE STANDARDS

A. References herein are made in accordance with the following abbreviations and all work under this Section shall conform to the latest editions as applicable.

   American Concrete Institute (ACI)
   ACI 301 - Specifications for Structural Concrete for Building
   ACI 305R - Hot Weather Concreting
   ACI 306R - Cold Weather Concreting
   ACI 316R - Recommendations for Construction of Concrete Pavements and Concrete Bases

   American Society for Testing and Materials (ASTM)
   ASTM 185 - Welded Wire Steel Fabric for Concrete Reinforcement
   ASTM 615 - Deformed and Plain Billot Steel Bars for Concrete Reinforcement
   ASTM C33 - Concrete Aggregates
   ASTM C94 - Ready-Mixed Concrete
   ASTM C143 - Slump of Portland Cement Concrete
   ASTM C150 - Portland Cement
   ASTM C171 - Sheet Materials for Curing Concrete
   ASTM C231 - Air Content of Freshly Mixed Concrete by the Pressure Method
   ASTM C260 - Air Entraining Admixtures for Concrete
   ASTM C309 - Liquid Membrane-Forming Compounds for Curing
1.04 QUALITY ASSURANCE

A. Work and materials for construction of the cement concrete walks shall conform to ACI 316R. Other cast-in-place concrete shall conform to ACI 301.

B. Work, materials, and color of the wheelchair ramp paving shall conform to applicable sections of Americans with Disabilities Act (ADA) and State standards, whichever is more stringent.

C. Dimensions, locations, and details of equipment pads, anchors, supports, and similar features shown on the drawings are approximate. Manufacturer's approved shop drawings of equipment to be supported, anchored, or contained thereby shall be consulted for exact location, size and details.

1.05 SUBMITTALS

A. Description of methods and sequence of placement for each type of specially-finished concrete, including description of methods and sequence of placement.

B. Manufacturer's product data for the following:
   
   1. Form release agent.
   2. Concrete coloring additive.
   3. Preformed joint filler.
   4. Concrete reinforcement specification data from manufacturer.
   5. Stamp and Imprinting tools, manufacturers literature.

1.06 TESTING

A. The Owner may employ an independent testing laboratory to inspect and test concrete paving and other cast-in-place concrete work.
B. Testing of materials and installed work may occur at any time during progress of the work. Rejected materials and installed work shall be removed and replaced.

**PART 2—PRODUCTS**

### 2.01 STEEL REINFORCEMENT

A. Steel reinforcing bars shall conform to ASTM A615, Grade 60, deformed.

1. Bars employed as dowels shall be hot-rolled plain rounds.

B. Steel wire: ASTM A82, plain cold drawn steel.

C. Welded wire fabric reinforcement shall conform to the applicable requirements of ASTM A185. Fabric reinforcement shall be furnished in flat sheets. Fabric reinforcement in rolls will not be permitted.

D. Supports for Reinforcement: Bolsters, chairs, and other devices for spacing, supporting, and fastening reinforcing bars, and welded wire fabric in place shall be wire bar-type supports complying with CRSI specifications.

1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI, Class 1).

### 2.02 PORTLAND CEMENT CONCRETE

A. Portland cement concrete shall:

1. Have a maximum water cement ratio of 0.45 conforming to ACI 316R.

2. Be Air-entrained type conforming to ASTM C94. Air content by volume shall be 6 percent ± 1 percent, and shall be tested in accordance with ASTM C260.

3. Be placed with a slump not less than 3 inches nor greater than 4 inches, determined in accordance with ASTM C143.

4. Use cement conforming to ASTM C150, Type I or II. Only one color of cement, all of the same manufacturer, shall be used for the work. **[Type III cement shall be used only with the prior approval of the Engineer.]**
5. Use fine and coarse aggregates conforming to ASTM C33.

6. Contain a water reducing agent to minimize cement and water content of the concrete mix at the specified slump. Water reducing agent shall conform to ASTM C494, Type A.

7. Contain no calcium chloride or admixtures containing calcium chloride shall be added to the concrete. No admixtures other than those specified shall be used in the concrete without the specific written permission of the Engineer in each case.

2.03 CONCRETE AGGREGATES

A. Provide in conformance with ASTM C33.

B. Fine aggregates in conformance with ASTM C33, part 6.

C. Coarse aggregates in conformance with ASTM C33, parts 9 thru 11 and tables 2 and 3, with the following Class designations:

1. 1S – For footings and foundations not exposed to the weather.

3. 4S – For pavements, driveways, curbs, walkways, sidewalks, and retaining walls, that are exposed to the weather.

3. 1N – For pavements, driveways, curbs, walkways, sidewalks, and retaining walls that are not exposed to the weather.

D. Exposed Aggregate for ADA curb ramps shall be selected, hard, durable, washed rounded stones free of deleterious reactivity to cement with graded sizes between ½ to ¾ inch diameter nominal sieves.

2.04 COLORED CONCRETE

A. Color hardener and curing compound shall be manufactured and supplied by the Bomanite Corporation, 81 Encina Avenue, Palo Alto, CA 94301; tel. 800-854-2094, or approved equivalent.

1. Color for concrete shall have visual contrast with surrounding paving.

2. Curing compound shall be liquid applied.

B. Surface sealer shall be non-yellowing type which breathes water vapor, as manufactured by ProSoCo, Sika Chemical Corporation, Dural-International Corporation, or approved equivalent.
2.05 CURING MATERIALS FOR UNCOLORED CONCRETE

A. Curing shall be accomplished by the following methods:

1. Moist curing with burlap covering.
2. Curing paper, nonstaining, fiber reinforced laminated Kraft bituminous product conforming to ASTM C171. Four mil polyethylene sheeting may be substituted for curing paper.
3. Curing compound, a resin-base, white pigmented compound conforming to ASTM C309, Type 2.

2.06 EXPANSION JOINTS

A. Expansion joint filler shall be preformed, nonbituminous type conforming to ASTM D1752, Type II, similar to Sealtight Cork Expansion Joint Filler, manufactured by W.R. Meadows, Inc., Elgin, IL 60120, or approved equivalent.

1. Premolded filler shall be one piece for the full depth and width of the joint.

B. Smooth dowel shall be hot rolled plain steel dowel bonded at one end and operating in smooth close fitting sleeve (of same material) at the other.

2.07 CONTROL JOINTS

A. Joint filler to be polyethylene foam with manufacturer’s recommended sealant.

2.08 FORMS

A. Cylindrical Forms: Sonotube Fibre Forms, wax-impregnated strippable forms manufactured by Sonoco Products Company, General Products Division, ABS or PVC plastic reusable forms, or approved equivalent.

B. Forms for Exposed Finish: Plywood, metal, metal-framed plywood faced, or other acceptable panel materials. Plywood shall be APA Ref. 1 B-B (Concrete Form), Class I Exterior Grade plywood or B-B or A-C Class I high density overlay concrete form plywood. Form work materials shall produce smooth, continuous, straight and level surfaces.
C. **Forms for Unexposed Finish:** Plywood, lumber or metal, with lumber dressed on at least two edges and one side.

D. **Form Ties:** Prefabricated, adjustable length galvanized steel snap-off ties, with brackets, cones, cornerlocks and other accessories as necessary.

E. **Form Release Agent:** Commercial formulation compounds that will not bond with, stain or adversely affect concrete.

F. **Imprinting Tools:** Mats and tools used to stamp projecting texture and patterns onto plastic concrete surfaces shall be specifically designed with rigid back supports to enable a clean, sharp, stamping image. Stamps for curb ramps shall be designed to meet ADA detectable warning requirements.

### 2.09 FIBROUS REINFORCING

A. Material shall meet ASTM C1116 and shall be as manufactured by NyCon Incorporated, or approved equal.

B. Mix fibrous reinforcement in accordance with manufacturer’s instructions including product data and technical bulletins.
   1. Add fibrous reinforcement to concrete mix at the concrete batch facility.
   2. Adding and mixing fibrous reinforcement at the job site will not be allowed.

C. Provide job mix design data to show concrete mix will attain specified strength requirements.

### PART 3—EXECUTION

#### 3.01 PREPARATION OF SUBGRADE

A. The subgrade of areas to be paved shall be graded and compacted as specified in Section 02320, Pavement Subbase and Base.

B. Excavation required in pavement subgrade shall be completed before fine grading and final compaction of subgrade are performed. Where excavation must be performed in completed subgrade, subbase, base, or pavement, subsequent backfill and compaction shall be performed as required by the Engineer and as specified in Section 02300, Earthwork.

C. Materials shall not be stored or stockpiled on subgrade.

D. Prepared subgrade will be inspected by the Engineer. Subgrade shall be approved for installation of the gravel base course. Disturbance to subgrade caused by inspection procedures shall be repaired.
3.02 BASE COURSE

A. Base course for concrete paving shall be pavement subbase course or gravel base materials specified in Section 02320, Pavement Subbase and Base, as shown on the Drawings.

B. Width of base course shall extend beyond edge of the proposed pavement as shown on the Drawings.

C. Material shall be placed in lifts no more than 6 inches thick, compacted measure. Each lift shall be separately compacted to specified density.

1. Material shall be placed adjacent to wall, manhole, catch basin, and other structures only after they have been set to required grade.

2. Rolling shall begin at sides and progress to center of crowned areas, and shall begin on low side and progress toward high side of sloped areas. Rolling shall continue until material does not creep or wave ahead of roller wheels.

3. Surface irregularities which exceed 1/2 inch as measured by means of a 10 foot long straightedge, shall be regraded and recompacted.

D. Base course shall be compacted at optimum moisture content to not less than 95 percent of maximum density as determined by ASTM D1557.

E. The base course shall be kept clean and uncontaminated. Less select materials shall not be permitted to become mixed with the base course material.

3.03 STEEL REINFORCEMENT

A. Before being placed in position, reinforcing steel shall be thoroughly cleaned of loose mill and rust scale, dirt, ice, and other foreign material which may reduce the bond between the concrete and reinforcing. Where there is delay in placing concrete after reinforcement is in place, bars shall be reinspected and cleaned when required.

B. Any bar showing cracks after bending shall be discarded.

C. Unless otherwise shown on the Drawings, reinforcing shall extend within 2 inches of form work and expansion joints. Reinforcing shall continue through control joints. Adjacent sheets of fabric reinforcing shall lap 6 inches.

D. After forms have been coated with form release agent, but before concrete is placed, reinforcing steel shall be securely wired in the required position and shall be maintained in that position until concrete is placed and compacted. Chair bars and supports shall be installed in a number and arrangement approved by the Engineer.
3.04 FORMS

A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits.

1. Provide Class A tolerances for concrete surfaces exposed to view.
2. Provide Class C tolerances for other concrete surfaces.

B. Construct forms to provide for openings, offsets, sinkages, keyways, recesses, moldings, chamfers, blocking, screeds, bulkheads, anchorages, and inserts, and other features required for the work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent cement paste from leaking.

C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Kerf wood inserts for forming keyways, reglets, recesses, and other features for easy removal.

D. Chamfer exposed corners and edges, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

E. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before placing concrete. Re-tighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.05 INSTALLING EMBEDDED ITEMS

A. General: Set and build into formwork the anchorage devices and other embedded items required for work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.

B. Forms for Slabs: Set edge forms, bulkheads, and intermediate screen strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.06 PREPARING FORM SURFACES

A. Coat contact surfaces of forms with an approved, nonresidual, low-VOC form-coating compound before placing reinforcement.

3.07 CONCRETE PLACING

A. Equipment, methods of mixing and placing, and precautions to be observed as to weather, and condition of base shall meet the requirements of ACI 316R.
B. The Engineer shall be notified of scheduled concrete placement sufficiently in advance of start of operation to allow preliminary inspection of the work, including subgrade, forms, and reinforcing steel.

C. Work shall not be performed during rainy weather or when temperature is less than 40°F (4.4°C).

D. Adjacent work shall be protected from stain and damage. Damaged and stained areas shall be replaced or repaired to equal their original conditions.

E. Existing concrete, earth, and other water-permeable material against which new concrete is to be placed shall be thoroughly damp when concrete is placed. There shall be no free water on surface.

F. Concrete which has set or partially set, before placing shall not be used. Retempering of concrete will not be permitted.

G. Concrete shall be thoroughly vibrated, or otherwise consolidated to secure a solid and homogeneous mass, thoroughly worked around reinforcement and into corners of forms.

H. When joining fresh concrete to concrete which has attained full set, latter shall be cleaned of foreign matter, and mortar laitance shall be removed by chipping and washing. Clean, roughened base surface shall be saturated with water, but shall have no free water on surface. A coat of 1:1 cement-sand grout, approximately 1/8 inch thick, shall be well scrubbed into the thoroughly dampened concrete base. New concrete shall be placed immediately, before grout has dried or set.

3.08 FINISHING

A. Concrete surfaces shall be screeded and finished true to line and grade, and free of hollows and bumps. Surface shall be dense and smooth.

1. Finished concrete surface for concrete subbases shall be woodfloated to a slightly rough surface. Surface shall not deviate more than 1/4 inch in 10 feet.

2. Finished concrete surfaces shall be wood-floated and steel troweled, or broom finished, to a uniform surface. Surface shall not deviate more than 1/8 inch in 10 feet.

B. Horizontal surfaces of concrete surfaces which will be exposed shall be given a light broomed finish, with direction of grooves in concrete surface perpendicular to length of concrete band, slab, or pad. After concrete has set sufficiently to prevent coarse aggregate from being torn from surface, but before it has completely set, brooms shall be drawn across the surface to produce a pattern of small parallel grooves. Broomed surface shall be uniform, with no smooth, unduly rough or porous spots, or other irregularities. Coarse aggregate shall not be dislodged by brooming operation.
C. Immediately following finishing operations, arises at edges and both sides of expansion joints shall be rounded to a 1/4 inch radius. Control joints to be tooled shall be scored into slab surface with scoring tool. Adjacent edges of control joint shall at same time be finished to a 1/4 inch radius.

D. Where finishing is performed before end of curing period, concrete shall not be permitted to dry out, and shall be kept continuously moist from time of placing until end of curing period, or until curing membrane is applied.

E. Sidewalks, walkways, accessible routes, and ramps shall be constructed and finished in accordance with the Americans With Disabilities Act, and State and Local requirements.

F. Exposed Aggregate Finish: Expose coarse aggregate in pavement surfaces as follows:
   1. Immediately after float finishing, spray-apply chemical surface retarder to pavement according to manufacturer’s written instructions.
   2. Cover pavement surface with plastic sheeting, sealing laps with tape, and remove when ready to continue finishing operations.
   3. Without dislodging aggregate, remove excess mortar by lightly brushing surface with a stiff, nylon-bristle broom.
   4. Fine-spray surface with water and brush. Repeat water flushing and brushing cycle until cement film is removed from aggregate surfaces to depth required.

3.09 STAMPING

A. Mat Stamping: While initially finished concrete is plastic accurately align and place stamp mats in sequence. Uniformly load mats and press into concrete to produce requirement imprint pattern and depth of imprint on concrete surface. Remove stamp mats immediately. Hand stamp edges and surfaces unable to be imprinted by stamp mats.

B. Tool Stamping: While initially finished concrete is plastic, vover surface with polyethylene film, stretch taut to remove wrinkles, lap sides and ends 3 inches (75mm), and secure to edge forms. Lightly broom surface to remove air bubbles. Accurately align and place stamp tools in sequence and tamp into concrete to produce required imprint pattern and depth of imprint on concrete surface. Remove stamp tools immediately. Hand stamp edges and surfaces unable to be imprinted by stamp tools. Unroll and remove polyethylene film immediately after tool stamping.
3.10 CURING

A. Concrete shall be kept continuously damp from time of placement until end of specified curing period or cured by other methods. Water shall not be added to surface during floating and troweling operations, and not earlier than 24 hours after concrete placement. Between finishing operations, surface shall be protected from rapid drying by a covering of waterproofing paper. Surface shall be damp when the covering is placed over it, and shall be kept damp by means of a fog spray of water, applied as often as necessary to prevent drying, but not sooner than 24 hours after placing concrete. None of the water so applied shall be troweled or floated into surface.

B. Concrete surfaces shall be cured by completely covering with curing paper or application of a curing compound.

1. Concrete cured using waterproof paper shall be completely covered with paper with seams lapped and sealed with tape. Concrete surface shall not be allowed to become moistened between 24 and 36 hours after placing concrete. During curing period surface shall be checked frequently, and sprayed with water as often as necessary to prevent drying, but not earlier than 24 hours after placing concrete.

2. Concrete cured with a curing compound shall have the compound applied at a rate of 200 square feet per gallon, in two applications perpendicular to each other.

3. Curing period shall be seven days minimum.

C. Only if additional protection is absolutely required, the surface should remain uncovered after the seven day period for at least 4 days, after which time new and unwrinkled non-staining reinforced waterproof Kraft curing paper may be used.

3.11 EXPANSION JOINTS

A. Expansion joints shall be 1/2 inch wide and located where shown on the Drawings. Expansion joints shall be troweled in the concrete to required width with preformed joint filler in place. Joint filler shall extend the full depth of the slab and full length of the expansion joint.

1. For concrete walks, pavements, and pads, depth of joint filler shall be placed to form a 1-1/4 inch deep recess for sealant and backer rod below finished concrete surface.

2. Use of multiple pieces to make up required depth and width of joint will not be permitted.
3.12 CONSTRUCTION JOINTS

A. Construction joints shall be placed whenever placing of concrete is suspended for more than 30 minutes.

1. Butt joint with dowels or thickened edge joint shall be used if construction joints occur at control joint locations.

2. Keyed joints with tiebars shall be used if the joint occurs at any other location.

3.13 CONTROL JOINTS

A. Control joints shall be tooled into the concrete slab, with 3-inch wide border and troweled edges, in pattern as shown on the Drawings. If no pattern is shown, [then pattern shall result in square shape with a maximum area of 36 square feet.] Joint shall be made after concrete is finished and when the surface is stiff enough to support the weight of workmen without damage to the slab, but before slab has achieved its final set.

B. Scoring shall cut into slab surface at least 1 inch, but in no case not less than 25 percent of slab depth.

3.14 COLD WEATHER CONCRETING

A. Materials for concrete shall be heated when concrete is mixed, placed, or cured when the mean daily temperature is below 40°F or is expected to fall to below 40°F within 72 hours. The concrete, after placing, shall be protected by covering, heat, or both.

B. Details of handling and protecting of concrete during freezing weather shall be subject to the approval and direction of the Engineer. Procedures shall be in accordance with provisions of ACI 306R.

3.15 HOT WEATHER CONCRETING

A. Concrete just placed shall be protected from the direct rays of the sun and the forms and reinforcement just prior to placing shall be sprinkled with cold water. Every effort shall be made to minimize delays which will result in excessive mixing of the concrete after arrival on the site.

B. During periods of excessively hot weather (95°F., or above), ingredients in the concrete shall be cooled with cold mixing water to maintain the temperature of the concrete at permissible levels in accordance with the provisions of ACI 305. Any concrete with a temperature above 95°F., when ready for placement, will be rejected.

C. Temperature records shall be maintained throughout the period of hot weather giving air temperature, general weather conditions (calm, windy, clear, cloudy, etc.) and relative humidity. Records shall include checks on temperature of concrete as delivered and after
placing in forms. Data should be correlated with the progress of the work so that conditions surrounding the construction of any part of the structure can be ascertained.

3.16 PROTECTION OF CONCRETE SURFACES

A. Concrete surfaces shall be protected from traffic or damage until surfaces have hardened sufficiently.

END OF SECTION 03301
APPENDIX A – SOIL AMENDMENT

Transportation
Land Development
Environmental
Services

Vanasse Hangen Brustlin, Inc.

Memorandum
To: Jeffrey Theriault, P.E.
Senior Project Engineer
Date: May 5, 2010
Project No.: 41585.00

From: Dean Gustafson
Professional Soil Scientist
Re: Baseball Field Soil Assessment
Thomas J. Hyland Memorial Park
Hartford, Connecticut

This memo provides an assessment of soil conditions of the middle baseball field located at the Thomas J. Hyland Memorial Park in Hartford, Connecticut. The middle baseball field is currently oriented with home plate facing to the southwest, a poor sun orientation for playing conditions. The City of Hartford proposes to reorient the field with home plate facing to the northeast and include an underdrain system to improve drainage conditions. Recommendations for soil amendments are provided below to improve the soil structure and provide necessary nutrients to establish a robust turf playing surface. Appropriate soil amendments of sand and organic matter are recommended to enhance soil drainage and structure. Fertilizer and lime recommendations are also provided for the establishment of a robust turf playing surface.

A VHB professional soil scientist collected composite soil samples from the middle baseball field on April 16, 2010. Four composite samples were collected in accordance with sampling techniques recommended by the University of Massachusetts Soil and Plant Tissue Testing Lab from four quadrants of the baseball field within the upper six (6) inches of the existing soil. The following sample names correlate to the different quadrants of the proposed field layout: HP-1 was collected from the infield; HP-2 was collected from right field; HP-3 was collected from center field; and, HP-4 was collected from left field. Samples were sent to the Soil and Plant Tissue Testing Lab at the University of Massachusetts, Amherst where an analysis of the soil’s physical and chemical characteristics was conducted. The attached table summarizes the lab results, which are also enclosed. Appropriate ratios of sand and organic matter to achieve proper soil drainage, structure and turf establishment were based on soil analysis results and VHB’s experience with providing similar soil amendment recommendations at Colt Park.

The upper six inches of the soil profile in each field should be treated with the following soil amendments:

Middle Baseball Field: Area = 30,000 square feet

Recommended sand amendment = increase of 40% by volume
Recommended organic matter amendment = increase 30% of volume
Sand amendment recommended = 225 cubic yards of sand
Organic matter amendment recommended = 170 cubic yards of organic matter
Hyland Park Middle Baseball Field Soil Amendment Recommendations

The following limestone and fertilizer recommendations were made for the subject area as part of the soil analysis. Soil testing should be conducted every two years as the nutritional content of soil continually changes.

Limestone: 50 pounds of limestone per 1,000 square feet
Fertilizer: Phosphorus - 6 pounds per 1,000 square feet
             Potassium - 6 pounds per 1,000 square feet
             Nitrogen - 1-2 pounds per 1,000 square feet

Suggested Schedule for Fertilizing and Lime:

Incorporate a 5-10-10 fertilizer at 40 pounds per 1,000 square feet plus 0-45-0 (triple superphosphate) fertilizer at 4 pounds per 1,000 square feet, 0-0-60 (muriate of potash) fertilizer and 50 pounds per 1,000 square feet of limestone into the top 4 inches of soil.

Retest soil early in the spring or autumn following seeding.
SOIL ANALYSIS REPORT FOR NEW LAWN

SOIL AND PLANT TISSUE TESTING LAB
WEST EXPERIMENT STATION
UNIVERSITY OF MASSACHUSETTS
AMHERST, MA 01003

LAB NUMBER: S100420-701
BAG NUMBER: 92111

VANASSE HANSEN BRUSTLIN, INC.
54 TUTTLE PLACE
MIDDLETOWN, CT 06457

SOIL WEIGHT: 5.26 g/5cc
CROP: COMMERCIAL TURF

SAMPLE ID: HP-1

LIMESTONE AND FERTILIZER RECOMMENDATIONS FOR NEW LAWN CONSTRUCTION

Apply 50 lb of limestone/1000 sq ft.
Incorporate lime thoroughly into top 6 inches of soil.

Fertilizer (per 1000 sq ft): 1-2 lbs N, 6 lbs P2O5, and 6 lbs K2O.

Many fertilizer sources and rates may combine to provide acceptable turfgrass establishment either from seed or sod. One or two options based on this soil test follow:

Incorporate a 5-10-10 fertilizer at 10 lbs/1000 sq ft plus
0-45-0 (triple superphosphate) fertilizer at 4 lbs/1000 sq ft and
0-0-60 (muriate of potash) fertilizer into the top 3 to 4 inches of soil.

Rest soil early in the spring or autumn following seeding or laying of sod.

PLEASE read the enclosed fact sheets for more specific information on fertilization and liming procedures.

MICRONUTRIENT PPM SOIL RANGE
Boron (B) 0.1 0.1-2.0
Manganese (Mn) 0.9 3-20
Zinc (Zn) 0.6 0.1-70

NITROGEN: NO3-N = 3 ppm
ORGANIC MATTER: 3.9 % (Desirable range 4-10 %)

SOIL pH 6.5
BUFFER pH 6.9

NUTRIENT LEVELS: PPM
Phosphorus (P) 1 XXX
Potassium (K) 28 XXXXXX
Calcium (Ca) 801 XXXXXXXXXXXXXXXXXXXXXXXXXX
Magnesium (Mg) 98 XXXXXXXXXXXXXXXXXXXXXXXXXX

CATION EXCH CAP K+ 1.0 Mg+11.2 Ca+62.3

PERCENT BASE SATURATION 6.8 Meg/100g

EXTRACTABLE ALUMINUM: 25 ppm (Soil range: 10-250 ppm)

The lead level in this soil is low.

VISIT www.umass.edu/plantl/soiltest FOR FURTHER INFORMATION ON SOIL TESTING AT UMASS.
TO CONTACT THE LAB: EMAIL soiltest@psis.umass.edu PHONE (413-545-2311).
### Textural Analysis Results

**Customer Name:** Vanasse Hangen Brustlin, Inc.  
**Address:** 54 Tuttle Place  
**City, State, Zip:** Middletown, CT 06457  
**Sample ID:** S100420-701  
**Customer Designation:** HP-1

#### USDA Size Fractions

<table>
<thead>
<tr>
<th>Main Fractions</th>
<th>Size (mm)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand</td>
<td>0.05-2.0</td>
<td>37.3</td>
</tr>
<tr>
<td>Silt</td>
<td>0.002-0.05</td>
<td>52.2</td>
</tr>
<tr>
<td>Clay</td>
<td>&lt; 0.002</td>
<td>10.5</td>
</tr>
<tr>
<td>Total</td>
<td>&lt; 2.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

#### PERCENT OF WHOLE SAMPLE PASSING

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Sieve #</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.00</td>
<td>#10</td>
<td>92.8</td>
</tr>
<tr>
<td>1.00</td>
<td>#18</td>
<td>90.6</td>
</tr>
<tr>
<td>0.50</td>
<td>#35</td>
<td>87.0</td>
</tr>
<tr>
<td>0.25</td>
<td>#60</td>
<td>84.2</td>
</tr>
<tr>
<td>0.10</td>
<td>#140</td>
<td>68.4</td>
</tr>
<tr>
<td>0.05</td>
<td>#270</td>
<td>58.2</td>
</tr>
<tr>
<td>0.02</td>
<td>20 um</td>
<td>28.4</td>
</tr>
<tr>
<td>0.005</td>
<td>5 um</td>
<td>14.0</td>
</tr>
<tr>
<td>0.002</td>
<td>2 um</td>
<td>9.7</td>
</tr>
</tbody>
</table>

#### USDA Textural Class

- **Silt loam**

#### Gravel Content

- **7.2%**

#### COMMENTS:

Hyland Park Site Improvements  
Hartford, CT  
Appendix A-4  
Soil Amendment
SOIL ANALYSIS REPORT FOR NEW LAWN

SOIL AND PLANT TISSUE TESTING LAB
WEST EXPERIMENT STATION
UNIVERSITY OF MASSACHUSETTS
AMHERST, MA 01003

04/24/10

LAB NUMBER: S100420-702
BAG NUMBER: 92111

SOIL WEIGHT: 4.79 g/5cc
CROP: COMMERCIAL TURF

VANASHE HANSEN BRUSTLIN, INC. COMMENTS: DGUSTAFSON@VHB.COM
54 TUTTLE PLACE
MIDDLETOWN, CT 06457

SAMPLE ID: HP-2

LIMESTONE AND FERTILIZER RECOMMENDATIONS FOR NEW LAWN CONSTRUCTION

Apply 50 lb of limestone/1000 sq ft.
Incorporate lime thoroughly into top 6 inches of soil.

Fertilizer (per 1000 sq ft): 1-2 lbs N, 6 lbs P2O5, and 6 lbs K2O.

Many fertilizer sources and rates may combine to provide acceptable turfgrass establishment either from seed or sod. One or two options based on this soil test follow:

Incorporate a 5-10-10 fertilizer at 40 lbs/1000 sq ft plus 0-45-0 (triple superphosphate) fertilizer at 4 lbs/1000 sq ft and 0-0-60 (muriate of potash) fertilizer into the top 3 to 4 inches of soil.

Retest soil early in the spring or autumn following seeding or laying of sod.

PLEASE read the enclosed fact sheets for more specific information on fertilization and liming procedures.

<table>
<thead>
<tr>
<th>MICRONUTRIENT</th>
<th>PPM</th>
<th>SOIL RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron (B)</td>
<td>0.1</td>
<td>0.1-2.0</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>0.6</td>
<td>3-20</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>0.1</td>
<td>0.1-70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MICRONUTRIENT</th>
<th>PPM</th>
<th>SOIL RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (Cu)</td>
<td>0.2</td>
<td>0.3-8.0</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>1.8</td>
<td>1.0-40</td>
</tr>
<tr>
<td>Sulfur (S)</td>
<td>13.9</td>
<td>1.0-40</td>
</tr>
</tbody>
</table>

SOIL pH 6.5
BUFFER pH 7.0

NITROGEN: NO3-N = 1 ppm
ORGANIC MATTER: 2.9 % (Desirable range 4-10%)

NUTRIENT LEVELS: PPM

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus (P)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potassium (K)</td>
<td>31</td>
<td>XXXX</td>
<td>XXXXXX</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
</tr>
<tr>
<td>Calcium (Ca)</td>
<td>899</td>
<td>XXXXXX</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
<td></td>
</tr>
<tr>
<td>Magnesium (Mg)</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CATION EXCH CAP 5.8 Meq/100g
K+ 1.5 Meq=17.6 Ca=81.1

PERCENT BASE SATURATION

MICRONUTRIENT LEVELS

EXTRACTABLE ALUMINUM: 21 ppm (Soil range: 10-250 ppm)

The lead level in this soil is low.

VISIT www.umass.edu/plsoils/soiltest FOR FURTHER INFORMATION ON SOIL TESTING AT UMASS.
TO CONTACT THE LAB: EMAIL soiltest@psis.umass.edu PHONE (413-545-2311).

Hyland Park Site Improvements
Hartford, CT
Appendix A-5
Soil Amendment

41585.00
### Textural Analysis Results

**Customer Name:** Vanasse Hangen Brustlin, Inc.  
Dean Gustafson  
54 Tuttle Place  
Middletown, CT 06457

**Sample ID:** S100420-702

**Customer Designation:** HP-2

<table>
<thead>
<tr>
<th>USDA Size Fractions</th>
<th>Percent</th>
<th>PERCENT OF WHOLE SAMPLE PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Fractions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand 0.05-2.0</td>
<td>35.5</td>
<td></td>
</tr>
<tr>
<td>Silt 0.002-0.05</td>
<td>53.9</td>
<td></td>
</tr>
<tr>
<td>Clay &lt; 0.002</td>
<td>10.6</td>
<td></td>
</tr>
<tr>
<td>Total &lt; 2.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>USDA Size Fractions</th>
<th>Percent</th>
<th>PERCENT OF WHOLE SAMPLE PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sand Fractions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Coarse 1.0-2.0</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Coarse 0.5-1.0</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Medium 0.25-0.5</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Fine 0.10-0.25</td>
<td>9.8</td>
<td></td>
</tr>
<tr>
<td>Very Fine 0.05-0.10</td>
<td>14.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35.5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>USDA Size Fractions</th>
<th>Percent</th>
<th>PERCENT OF WHOLE SAMPLE PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Silt Fractions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coarse 0.02-0.05</td>
<td>34.1</td>
<td></td>
</tr>
<tr>
<td>Medium 0.005-0.02</td>
<td>15.3</td>
<td></td>
</tr>
<tr>
<td>Fine 0.002-0.005</td>
<td>4.5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Sieve #</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.00</td>
<td>#10</td>
<td>89.3</td>
</tr>
<tr>
<td>1.00</td>
<td>#18</td>
<td>85.7</td>
</tr>
<tr>
<td>0.50</td>
<td>#35</td>
<td>82.0</td>
</tr>
<tr>
<td>0.25</td>
<td>#60</td>
<td>79.5</td>
</tr>
<tr>
<td>0.10</td>
<td>#140</td>
<td>70.7</td>
</tr>
<tr>
<td>0.05</td>
<td>#270</td>
<td>57.5</td>
</tr>
<tr>
<td>0.02</td>
<td>20 um</td>
<td>27.1</td>
</tr>
<tr>
<td>0.005</td>
<td>5 um</td>
<td>13.5</td>
</tr>
<tr>
<td>0.002</td>
<td>2 um</td>
<td>9.4</td>
</tr>
</tbody>
</table>

**USDA Textural Class:** silt loam  
**Gravel Content:** - 10.7%

**Comments:**
SOIL ANALYSIS REPORT FOR NEW LAWN

4/24/10

LAB NUMBER: S100420-703
BAG NUMBER: 92111

SOIL WEIGHT: 5.18 g/5cc
CROP: COMMERCIAL TURF

VANASSE HANGEN BRUSTLIN, INC. COMMENTS: DGIUSTAFSON@VHB.COM
54 TUTTLE PLACE MIDDLETOWN, CT 06457

SAMPLE ID: HP-3

LIMESTONE AND FERTILIZER RECOMMENDATIONS FOR NEW LAWN CONSTRUCTION

No limestone is required. If peat moss or similar material is to be incorporated, see enclosed fact sheet.

Fertilizer (per 1000 sq ft): 1-2 lbs N, 6 lbs P2O5, and 4 lbs K2O.

Many fertilizer sources and rates may combine to provide acceptable turfgrass establishment either from seed or sod. One or two options based on this soil test follow:

Incorporate a 5-10-10 fertilizer at 40 lbs/1000 sq ft plus 0-45-0 (triple superphosphate) fertilizer at 4 lbs/1000 sq ft into the top 3 to 4 inches of soil. Retest soil one year after establishment.

PLEASE read the enclosed fact sheets for more specific information on fertilization and liming procedures.

<table>
<thead>
<tr>
<th>MICRONUTRIENT</th>
<th>PPM</th>
<th>SOIL RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron (B)</td>
<td>0.2</td>
<td>0.1-2.0</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>1.0</td>
<td>0.1-70</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>0.2</td>
<td>0.3-8.0</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>1.4</td>
<td>1.0-40</td>
</tr>
<tr>
<td>Sulfur (S)</td>
<td>16.0</td>
<td>1.0-40</td>
</tr>
</tbody>
</table>

| NITROGEN: NO3-N = 11 ppm |

| BUFFER pH | 7.0 |

<table>
<thead>
<tr>
<th>NUTRIENT LEVELS: PPM</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus (P)</td>
<td></td>
<td>XX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potassium (K)</td>
<td>59</td>
<td>XXXXXX</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>Calcium (Ca)</td>
<td>1045</td>
<td>XXXXXXXXXX</td>
<td>XXXX</td>
<td></td>
</tr>
<tr>
<td>Magnesium (Mg)</td>
<td>170</td>
<td>XXXXXXXXXX</td>
<td>XXXXX</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CATION EXCH CAP</th>
<th>PERCENT BASE SATURATION</th>
<th>MICRONUTRIENT LEVELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.6 Meq/100g</td>
<td>K = 2.3 Mg=20.6 Ca=77.3</td>
<td>ALL NORMAL</td>
</tr>
</tbody>
</table>

EXTRACTABLE ALUMINUM: 17 ppm (Soil range: 10-250 ppm)

The lead level in this soil is low.

VISIT www.umass.edu/plsoils/soiltest FOR FURTHER INFORMATION ON SOIL TESTING AT UMASS.
TO CONTACT THE LAB: EMAIL soiltest@psis.umass.edu PHONE (413)-545-2311.

Hyland Park Site Improvements
Hartford, CT
Appendix A-7
Soil Amendment

41585.00
# Soil and Plant Nutrient Testing Lab

West Experiment Station  
University of Massachusetts  
Amherst, MA 01003  
413.545.2311  
http://www.umass.edu/plsoils/soltest

---

## TEXTURAL ANALYSIS RESULTS

Customer Name: Vanasse Hangen Brustlin, Inc.  
Dean Gustafson  
54 Tuttle Place  
Middletown, CT 06457

Sample ID: S100420-703  
Customer Designation: HP-3

### USDA SIZE FRACTIONS

<table>
<thead>
<tr>
<th>Main Fractions</th>
<th>Size (mm)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand</td>
<td>0.05-2.0</td>
<td>43.3</td>
</tr>
<tr>
<td>Silt</td>
<td>0.002-0.05</td>
<td>46.8</td>
</tr>
<tr>
<td>Clay</td>
<td>&lt; 0.002</td>
<td>9.9</td>
</tr>
<tr>
<td>Total</td>
<td>&lt; 2.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

### PERCENT OF WHOLE SAMPLE PASSING

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Sieve #</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.00</td>
<td>#10</td>
<td>90.6</td>
</tr>
<tr>
<td>1.00</td>
<td>#18</td>
<td>87.9</td>
</tr>
<tr>
<td>0.50</td>
<td>#35</td>
<td>83.6</td>
</tr>
<tr>
<td>0.25</td>
<td>#60</td>
<td>77.3</td>
</tr>
<tr>
<td>0.10</td>
<td>#140</td>
<td>60.7</td>
</tr>
<tr>
<td>0.05</td>
<td>#270</td>
<td>51.4</td>
</tr>
<tr>
<td>0.02</td>
<td>20 um</td>
<td>26.3</td>
</tr>
<tr>
<td>0.005</td>
<td>5 um</td>
<td>12.4</td>
</tr>
<tr>
<td>0.002</td>
<td>2 um</td>
<td>9.0</td>
</tr>
</tbody>
</table>

### Silt Fractions

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse</td>
<td>27.6</td>
</tr>
<tr>
<td>Medium</td>
<td>15.3</td>
</tr>
<tr>
<td>Fine</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>46.8</td>
</tr>
</tbody>
</table>

USDA Textural Class: loam  
Gravel Content = 9.4%

**COMMENTS:**
SOIL ANALYSIS REPORT FOR NEW LAWN

SOIL AND PLANT TISSUE TESTING LAB
WEST EXPERIMENT STATION
UNIVERSITY OF MASSACHUSETTS
AMHERST, MA 01003

LAB NUMBER: S100420-704
BAG NUMBER: 92111

SOIL WEIGHT: 5.11 g/cc
CROP: COMMERCIAL TURF

YANASSE HANGEN BRUSTLIN, INC. COMMENTS: DGUSTAFSON@VHE.COM
54 TUTTLE PLACE MIDDLETOWN, CT 06457

SAMPLE ID: HP-4

LIMESTONE AND FERTILIZER RECOMMENDATIONS FOR NEW LAWN CONSTRUCTION

No limestone is required. If peat moss or similar material is to be incorporated, see enclosed fact sheet.

Fertilizer (per 1000 sq ft): 1-2 lbs N, 6 lbs P2O5, and 4 lbs K2O.

Many fertilizer sources and rates may combine to provide acceptable turfgrass establishment either from seed or sod. One or two options based on this soil test follow:

Incorporate a 5-10-10 fertilizer at 40 lbs/1000 sq ft plus 0-45-0 (triple superphosphate) fertilizer at 4 lbs/1000 sq ft into the top 3 to 4 inches of soil. Re-test soil one year after establishment.

PLEASE read the enclosed fact sheets for more specific information on fertilization and liming procedures.

<table>
<thead>
<tr>
<th>MICRONUTRIENT</th>
<th>ppm</th>
<th>SOIL RANGE</th>
<th>MICRONUTRIENT</th>
<th>ppm</th>
<th>SOIL RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron (B)</td>
<td>0.2</td>
<td>0.1-2.0</td>
<td>Copper (Cu)</td>
<td>0.2</td>
<td>0.3-9.0</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>0.9</td>
<td>3-20</td>
<td>Iron (Fe)</td>
<td>2.7</td>
<td>1.0-40</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>0.1</td>
<td>0.1-70</td>
<td>Sulfur (S)</td>
<td>16.3</td>
<td>1.0-40</td>
</tr>
</tbody>
</table>

SOIL pH: 6.7
BUFFER pH: 6.9
NITROGEN: NO3-N = 7 ppm
ORGANIC MATTER: 2.8% (Desirable range 4-10%)

NUTRIENT LEVELS: PPM

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphorus (P)</td>
<td>2 XX</td>
<td>XXXXXXXXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potassium (K)</td>
<td>37 XXXXXXXX</td>
<td>XXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium (Ca)</td>
<td>997 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium (Mg)</td>
<td>123 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CATION EXCHANGE CAPACITY: 7.8 Meq/100g
PERCENT BASE SATURATION: K= 1.2, Mg=12.7, Ca= 63.0
ALL NORMAL

EXTRACTABLE ALUMINUM: 21 ppm (Soil range: 10-250 ppm)
The lead level in this soil is low.

VISIT www.umass.edu/plsoils/soiltest FOR FURTHER INFORMATION ON SOIL TESTING AT UMASS.
TO CONTACT THE LAB: EMAIL soiltest@psis.umass.edu PHONE (413-545-2311).

Hyland Park Site Improvements
Hartford, CT
Appendix A-9
Soil Amendment

41585.00
TEXTURAL ANALYSIS RESULTS

Customer Name: Vanasse Hangen Brustlin, Inc.
Dean Gustafson
54 Tuttle Place
Middletown, CT 06457

Sample ID: S100420-704
Customer Designation: HP-4

<table>
<thead>
<tr>
<th>USDA SIZE FRACTIONS</th>
<th>PERCENT OF WHOLE SAMPLE PASSING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main Fractions Size (mm)</td>
</tr>
<tr>
<td>Sand</td>
<td>0.05-2.0</td>
</tr>
<tr>
<td>Silt</td>
<td>0.002-0.05</td>
</tr>
<tr>
<td>Clay</td>
<td>&lt; 0.002</td>
</tr>
<tr>
<td>Total</td>
<td>&lt; 2.0</td>
</tr>
<tr>
<td>Sand Fractions Size (mm)</td>
<td>2.00</td>
</tr>
<tr>
<td>Coarse</td>
<td>1.0-2.0</td>
</tr>
<tr>
<td>Medium</td>
<td>0.5-1.0</td>
</tr>
<tr>
<td>Fine</td>
<td>0.25-0.5</td>
</tr>
<tr>
<td>Very Fine</td>
<td>0.05-0.10</td>
</tr>
<tr>
<td></td>
<td>37.6</td>
</tr>
<tr>
<td>Silt Fractions Size (mm)</td>
<td>0.02</td>
</tr>
<tr>
<td>Coarse</td>
<td>0.02-0.05</td>
</tr>
<tr>
<td>Medium</td>
<td>0.005-0.02</td>
</tr>
<tr>
<td>Fine</td>
<td>0.002-0.005</td>
</tr>
<tr>
<td></td>
<td>51.9</td>
</tr>
</tbody>
</table>

USDA Textural Class = silt loam
Gravel Content = 12.0%

COMMENTS:
Definitions:

Bid or Proposal refers to any form of solicitation the City may use such as a Request for Bids (RFB), Request for Proposals (RFP) or request for Response (RFR).

Candidate or Respondent refers to an individual or company who is considering or has submitted a response to a solicitation. This is also commonly referred to as “bidder.”

City refers to the City of Hartford, the Hartford Public Schools and any other governmental entity participating in the RFR process and/or resulting award(s).

Provider refers to the Candidate or Candidates who receive an award and who enter into a contract with the City.
3.1 HOW TO RESPOND: Supply the required information on and along with the response form. An explicit agent of your organization must sign the response form and any supplementary proposal document and submit it to the address indicated in Section 1.0 – Response Checklist.

Mark the original response package as "ORIGINAL" on the front cover. We will open the response upon receipt if this information is not provided on the face of the envelope. In this case the City cannot be held responsible for the confidentiality of the response.

A. Do not wait until the due day to begin to prepare your response. Preparing your response early helps avoid issues related to computer equipment or Internet access malfunction. It is the Candidate’s responsibility to ensure that responses are received in their entirety, on time and at the required location.

B. Reserve

C. A certified check or bid bond, when required, will be specified in the Invitation to Respond and must accompany your response in the amount indicated. Certified checks will be returned to all unsuccessful Candidates upon the awarding of the contract. The successful Candidate’s surety shall be held pending receipt of payment and performance bonds and execution of contract.

Bonds may be delivered via an electronic bid bond service such as Surety 2000, (www.surety2000.com) scanned and attached to your on-line submission*, mailed or hand delivered. *If you elect to scan and attach your bond to an on-line submission, the original surety documents must be delivered to the address in (F) below within one working day of the response deadline.

If your response is not accompanied by a bond, certified check or proof that a valid bond has been obtained at the RFR opening it may be rejected.

If you manage a small business and have difficulty obtaining bonds (or just haven’t done it before) help is available from the Small Business Administration (SBA) through “The Surety Bond Guarantee Program.” One of the bonding companies working with this program is Suggs & Associates in Windsor, CT. For more information go to www.sba.gov, choose “Services.” Then select “Financial Assistance” and click on “Surety Bond.”

D. The successful Candidate may be required to furnish a performance bond and payment bonds, each for the full contract amount, prior to execution of a contract and/or performance under Purchase Orders. Indicate the cost for these bonds, to be added to the contract sum on the response form. For 3.1, C & D:

Surety Companies must be listed on the current Federal Register, licensed in the State of Connecticut and have an underwriting limitation exceeding the value of the project with no more than 5% of capital in surplus tied to any one risk.

Banks must have a branch office in Connecticut with insurance provided by the FDIC.

E. The electronic files, from which you printed your hard copy proposal, are to be emailed to the buyer identified at the bottom of the Invitation to Respond within one hour AFTER the deadline for submitting hard copy responses. Email transmission of these documents is not encrypted and locked so if you transmit this information before the hard copy response
deadline it may be viewed prematurely. The City is not responsible for the confidentiality of information transmitted via fax, email or other electronic means.

You may convert Word documents to pdf files (in fact we would prefer this). Excel worksheets however may not be submitted as pdf files.

The purpose of submitting these files is to reduce duplicate data entry and shorten the time needed for City staff to create the response summary. These electronic files will not serve as a substitute for the hard copy response that must be submitted by the RFR deadline.

Failure to follow these guidelines may be just cause for rejection of the response.

3.2 CORRECTION OR WITHDRAWAL OF BIDS; CANCELLATION OF AWARDS. Correction or withdrawal of inadvertently erroneous bids, including corrections to pricing if the accurate price can be derived from the bid response submitted prior to the bid deadline, before or after award, or cancellation of awards of Contracts or Purchase Orders based on such mistakes, shall be permitted with the approval, in writing, of the Procurement Manager.

3.3 QUANTITIES AND/OR USAGES: Quantities and/or usages are estimates only and in no way represent a commitment and/or intent to purchase the estimated amount. Actual quantities and delivery points may vary. The City reserves the right to order all quantities that may be needed, at the contract price, during the contract term regardless of the estimates provided in this RFR.

3.4 QUESTIONS & ADDENDA: Supplementary information, if issued, will be placed on the State of Connecticut, DAS website http://www.das.state.ct.us/Purchase/Portal/Portal_Home.asp. Candidates are responsible for obtaining all addenda related to this RFR. Candidates are advised to check for any addenda a minimum of twenty-four hours in advance of the response deadline.

Questions related to this project must be received in writing 72 hours in advance of the response submittal deadline. We strongly recommend that prospective Candidates review specifications early in the solicitation process and submit all questions at one time. Written questions are to be sent to the buyer whose name appears on the invitation to bid via email.

Responses shall be in writing, posted, in the form of an addendum on the State of Connecticut, DAS website http://www.das.state.ct.us/Purchase/Portal/Portal_Home.asp.

All communications related to this project are to be directed through the Department managing the RFR. This is the Department listed for receipt of responses in Section 1.0. In most cases this will be the Procurement Services Department. Candidates found to be communicating with City or School staff outside of Procurement Services (or the Department indicated in Section 1.0) will have their response rejected. The City of Hartford, the Public Schools, or its agents shall not be responsible for any oral instructions or interpretations given to a Candidate.

3.5 CRITERIA FOR AWARD: This Request for Response (RFR) does not necessarily contemplate an award based solely on price. Rather, the City reserves its rights to accept or reject any or all responses or any portion thereof that it may determine to be in its own best interests, for whatever reason.

3.6 QUALIFICATIONS OF CANDIDATES OFFERING A RESPONSE: The City may make such investigations as deemed necessary to determine the ability of the Candidate to perform the work and the degree to which any Candidate meets the criteria for award listed herein.
Each Candidate agrees to furnish the City any additional information requested.

If this RFR is set-aside for award to a small, minority or women owned business enterprise you must receive certification prior to award. This program is described in Sec. 2-660 of the Hartford Municipal Code and can be found at: [http://www.hartford.gov/purchasing/Documents.htm](http://www.hartford.gov/purchasing/Documents.htm). Qualified business, not currently certified, may obtain application forms from: [http://www.hartford.gov/human_relations/ohr2.0/MWBE%20Certification.htm](http://www.hartford.gov/human_relations/ohr2.0/MWBE%20Certification.htm).

3.7 THE REQUEST FOR RESPONSE (RFR) PROCESS: Solicitations are advertised as required by law. The City may also send invitations to businesses as it deems appropriate. Placement on a vendor mailing list or a history of having received invitations in the past or having received prior contract awards in no way obligates the City to continue any form of direct notification. At the discretion of the Procurement Manager the City may remove vendors from the mailing list for whatever reason including a poor performance history or failure to respond to previous invitations.

3.8 CONTRACTING: The City reserves the right to require the successful Candidate to execute a contract in a format supplied by the City. The terms and conditions of the contract to be signed upon the award of the RFR will supersede any inconsistent provision of the RFR documents. If the Candidate receiving a full or partial award fails to execute a contract as required, they shall be liable for, and agree to pay, on demand, the difference between the price bid and the price for which such contract is subsequently re-awarded, including the administrative cost of reissuing the contract. These costs will be recovered through the bid bond, if submitted, and any remaining sums due will be paid by the Candidate.

The award of any contract is subject to the following conditions and contingencies:

(a) The approval of such governmental agencies as may be required by law.
(b) The appropriation of adequate funds by the proper agencies.
(c) Compliance with all applicable laws, regulation, ordinances and codes of the United States, the State of Connecticut and the City of Hartford. Sections of Hartford’s Code which are most often applicable such as Living Wage for services and Set-aside program for Small and Minority business enterprises are posted at: [http://www.hartford.gov/purchasing/documents.htm](http://www.hartford.gov/purchasing/documents.htm). The entire City Code is available at off the City’s Home page: [http://www.hartford.gov](http://www.hartford.gov).
(d) The selected Candidate must be current in all tax or any other monetary obligation owed to the City of Hartford.
(e) The selected Candidate must have a current EEO certification (see section 3.10) on file with the City.
(f) If the Candidate is a corporation or other legal business entity, it must have a current license to do business in the State of Connecticut that is on file with the Connecticut Secretary of State’s office, or it must be organized under the laws of the State of Connecticut and current in terms of its required filings.

In the event the intention of this bid is to create a term contract for on-call construction services and unless otherwise indicated, the duration of the Contract will be one (1) year. Further, Contract terms may be negotiated on award anniversaries. City Ordinance Sec 2-558 (C) allows for a maximum of three Contract extensions provided that the funds are available, approved by the City for this purpose and that the Contractor has established a satisfactory performance record.
Notwithstanding the failure of City to exercise any option to renew this contract for an additional year, the Managing Authority reserves the right to unilaterally extend this contract on a month to month basis for a period not to exceed three (3) months under the same terms and conditions applicable to the preceding contract period.

3.9 CONTRACT DOCUMENTS The Contract documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), this Request for Response (RFR) and its referenced documents, General and Supplementary Conditions, drawings, any Addenda issued, the Contractor’s response to the RFR, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a Minor change in the Work issued by the Design Professional on behalf of the City; the Contract Documents do include other documents such as bidding requirements.

3.10 OBLIGATIONS OF THE CANDIDATE: At the time of the opening of proposals, each Candidate will be presumed to be thoroughly familiar with the City's requirements, and the objectives for each element of the project, item or service. A plea of mistake in the accepted response shall not be available to the Candidate for the recovery of the bid surety or as a defense to any action based upon an accepted response.

3.11 REQUIRED FORMS:

a) Candidate's EEO Report: As a condition of doing business with the City the selected respondent must be certified by the City as an Equal Employment Opportunity Employer. Certifications must be renewed annually. If your firm is not currently certified you may down load and complete the required forms from: http://www.hartford.gov/purchasing/documents.htm. Submit completed forms with your response. To check the current status of your EEO certification contact the Office of Human Relations, 860.757.9785, fax 860.722.6486 or email: lmrcuz@hartford.gov.

If your company employs four (4) or more people, please submit your EEO Policy Statement with your Response.

b) Taxpayer's Identification Number: Every respondent must provide their Taxpayer Identification Number on the response form. Award recipients, whether an individual, proprietor, partnership or a non-profit corporation or organization must file the Internal Revenue Service Form W-9, Request for Taxpayer Identification Number and Certification with the City.

3.12 SITE INSPECTION: Information contained in these documents is provided in good faith only that all Candidates may have access to the same information utilized by the City, and is not intended as a substitute for personal investigations, interpretations and judgment of the Candidate. As information may be approximated or incomplete, Candidates should conduct a thorough inspection or study of existing conditions/equipment. Any discrepancy, or need for clarification must be brought to the attention of the Architect/Engineer prior to the bid opening.

Submission of a bid shall be evidence that the Candidate has examined the site, compared it with the drawings and specifications and satisfied itself of the conditions existing at the site, the storage and handling of materials, and all other matters incidental to the work under this contract.
No additional compensation will be allowed for difficulties which the Candidate could have discovered or reasonably anticipated prior to bidding.

3.13 PREVAILING WAGES: Pursuant to Section 2-559 (B), Required Provisions. Each Agreement for the construction, remodeling or repair of any Infrastructure Facilities shall contain both of the following provisions:

1. "The wages paid to any mechanic, laborer or workman employed upon the work herein contracted to be done shall be at a rate equal to the prevailing wage rate in the State of Connecticut and or federal government, whichever is applicable, for the same work in the same trade or occupation."

2. "Each contractor and subcontractor, or an authorized officer or employee, responsible for supervision of the payment of wages shall submit, on a weekly basis within seven (7) days after the regular payment date of the payroll period, to the Director of the Office of Human Relations of the City, a "Weekly Certified Statement of Compliance." Due and timely compliance with this provision shall be a condition precedent to the approval and transmittal of the next and succeeding payments by the city or its authorized officers or agents to the contractor under the terms of this agreement."

3.14 RETAINAGE: When progress payments are being made for items being built or designed, the City may retain 5% of the total project cost until such time as a satisfactory guarantee bond, if required, is posted with the City, or other terms for retainage, as may be specified in the contract for this project, are met.

3.15 ACCEPTABLE BRANDS: The RFR specifications are not intended to limit consideration to the particular service organization or manufacturer from which they were developed. References to brand names or numbers are to be interpreted as establishing a standard of quality and is not to be construed as limiting competition. Brand names used within these specifications shall be presumed to be followed by the words "or approved equal".

Burden of proving a product and/or material as equal to a specific product and/or material by brand name is the responsibility of the Provider.

Final determination as to what is an "or equal" product will be made by the Procurement Manager in conjunction with other City staff. The City will award on the basis of the criteria stated herein, and reserves the right to waive or require compliance with any element of the specifications.

3.16 SAMPLES: Samples are furnished free of charge and may be held for comparison with deliveries. Candidate must arrange for their return if desired.

Samples are assumed to meet, at a minimum, City specifications for quality. All deliveries shall have at least the same quality as the accepted proposal sample. Latent deficiencies will be remedied by the contractor at no additional cost, or loss of service, to the City.

3.17 RESPONSE DEVELOPMENT: Candidates are responsible for all costs and expenses incurred in the preparation of a response and for any subsequent work on the response that is required by the City of Hartford. Any submittal is the property of the City of Hartford and will not be returned.

3.18 REGISTERING WITH THE SECRETARY OF STATE: Generally a foreign (meaning out
of State) corporation or LLC must file with the Secretary of State Office to do business in the state. Foreign Corporations should review Sect. 33-920 of the Connecticut General Statutes. If they do not find that the exemptions apply to them they must file a "Certificate of Authority."

Foreign LLC's are covered under Sections 34-222 to 34-236. If the exemptions (in 34-235) do not apply to them they must file a "Certification of Registration."

Companies may obtain forms and more information from the Secretary of the State web site located at: http://www.sots.ct.gov/CommercialRecording/Crdindex.html. Their number is 860.509.6002.

The State of Connecticut General Statutes can be found at: http://search.cga.state.ct.us/dtsearch_pub_statutes.html. Enter the section number with hyphen and in the "In Database(s)" window select "Statutes - Section text."

3.19 TIME PROVISIONS: The content of any response submitted is to remain valid and available to the City for ninety (90) days from the day proposals are due.

3.20. PERFORMANCE BOND AND LABOR & MATERIAL BOND
The successful contractor will be required to submit a Performance Bond and Payment Bond in the amount of 100% of contract award within 10 days of award. Said bonds shall be issued by an Insurance Company and said surety companies must be listed on the current Federal Register, licensed in the State of Connecticut with an underwriting limitation exceeding the value of the project with no more than 5% of capital in surplus tied to any one risk.

3.21. INSURANCE
List the name and address of the bidder's insurance agent as part of the bid. The successful Contractor shall be required to furnish insurance coverage, acceptable to the City, within ten (10) days from notice of award and must name the City as an additional insured on the face of the document. The City's standard insurance requirements are available at http://www.hartford.gov/purchasing/Documents.htm. Download document #1007_Construction Insurance Requirements.

3.22 PERFORMANCE EVALUATION
The Contractor understands that during the course of and at the conclusion of the project that the City will evaluate his/her overall performance. Based on information gathered from the City's project management team, the Procurement Manager will assess factors including, but not limited to, quality of work or service, completion record, job supervision, working relationship with other providers, bills for extras, organization, cooperation, worksite cleanliness and compliance with City MBE requirements. The contractor further understands and agrees that this record will be available for public scrutiny both in the project file and on the City's website for a minimum of two years. The contractor will not contest the Procurement Manager's scoring which will be final.

3.23 SUBCONTRACTORS
The Bidder shall not subcontract any portion of the project to be performed unless the prior consent of the City is given for both the work to be subcontracted and the subcontractor to perform the same. The terms and conditions of the underlying contract between the City and Contractor will become part and parcel of the terms and conditions of each subcontract. The identities of subcontractors will be submitted after the bid opening.
For the Lump Sum Bid:

Bidders are required to indicate in the space provided on the response form:
a. The nature of work to be performed by each subcontractor;
b. The subcontractor’s business name
c. The dollar amount of the individual subcontract included in the base bid;
d. The percentage of the value of the subcontract to the base bid;
e. If the subcontractor is a woman / minority business enterprise currently certified by the City of Hartford.

For the Alternates:
Identify the information outlined in 3.23 a-e for any alternate bid item(s) separately.

3.24. MINORITY BUSINESS UTILIZATION (MBE)
Bidders are required to set-aside for Minority Businesses the portion of work specified in the “Construction Contract Summary” sheet located behind the cover sheet for this bid. Bidders are encouraged to exceed the set-aside requirement specified. The City’s Minority Business listing as further described in section 3.6 shall be used by Bidders in selecting minority business contractors.

The sum of all minority business subcontracts shall be equal to or greater than the percentage specified in the “Construction Contract Summary Sheet” regardless of how the bid is awarded (base only or base plus one or more alternates). Failure to comply with the required percentage of minority business utilization will be cause for rejection of bid. When alternate bid items are included in the proposal, the “Subcontractor Utilization Commitment” form should be completed separately for each alternate bid item.

3.24.1 City Certification Required
Bidders shall utilize Minority subcontractors who hold a current certification by the City of Hartford. Certifications by any other government entity shall not be sufficient to qualify the subcontractor to participate in the City of Hartford's minority business utilization preference program. In selecting its minority subcontractors, Bidder is cautioned to seek documented proof that its subcontractors hold valid certification by the City. Failure to identify City certified Minority Business subcontractors will be cause for rejection of bid.

3.24.2 Percentage of Work to be Performed
Designated MBE’s shall perform at least 70% of the work with their own forces and as part of their own operations excluding the manufacture or purchase of proprietary products.

3.24.3 Minority Business Listing
A listing of Minority Businesses holding certification by the City of Hartford is available at http://www.hartford.gov/human_relations/regreportreformat.pdf or in the Office of Human Relations, 550 Main Street, Hartford, CT 06103. The City's listing of minority businesses is comprised of companies whereby at least 51% of the company is owned and operated by one or more of the following group persons: Black Americans, Hispanic Americans, Women, Asian Pacific Americans, Pacific Islanders, American Indians and descendants from the Iberian Peninsula. It should be understood that such listings are made available to assist Bidders in satisfying bid requirements; however, Bidder's selection of a subcontractor is its sole responsibility and all work performed under the contract shall be Bidder's sole responsibility. The City does not sponsor or recommend the selection of any one vendor. Certification by the City of Hartford as a minority business does not imply that the business is qualified to perform the work specified in this bid. The City reserves the right to request alternate minority subcontractors for whatever reason.

3.24.4 Proof of Minority Business Utilization Required
Prior to award of contract, the successful Bidder shall be required to file with the City Engineer
the actual form of subcontract with subcontractor(s) named in at least the minimum dollar value as stated in the "Subcontractor Utilization Commitment" form. The subcontract shall state the percentage of work which will be performed by the MBE with its own forces and as part of its operation. Failure to comply with proof of subcontract within 10 days of notification may result in the rejection of bid and may be cause for forfeiture of Bidders’ bid surety. Further, the City reserves the right to monitor the performance and payment of such subcontracts; therefore, upon request by the City, the successful Bidder shall be required to furnish proof of payment to its subcontractors. Failure to comply with such monitoring requirements within ten days of written request will result in the withholding of payment to Bidder.

3.24.5 Changes in Subcontractors after Award
The successful Bidder may not change subcontractor(s) after the contract has been let unless and until it has received written approval from the City of Hartford. Any such approval shall be based upon a written request by the Contractor or City, which details performance and/or other issues related to the subcontractor(s).

3.25 EQUAL EMPLOYMENT OPPORTUNITY/AFFIRMATIVE ACTION REQUIREMENTS

General Information
3.25.1 The successful Bidder, as a condition of being awarded this contract shall agree to comply with all contractual Equal Employment Opportunity/Affirmative Action performance requirements as outlined herein. All contractors, sub-contractors, vendors, and labor referral organizations must, as a condition of their participation upon city of Hartford capital construction projects, comply with the provisions of “Chapter 2, Article XII” of the Municipal Code and the “Greater Hartford Affirmative Action Plan” established pursuant thereto. All Bidders are directed to the Proposal section wherein special bid submittal items related to this section are outlined.

3.25.2 The successful Bidder, as requirement of final contract execution will additionally agree to comply with the following provisions:
   b. Sign and submit the document entitled “Affidavit For Becoming Signatory to the Greater Hartford Affirmative Action Plan”.
   c. Submit a report of current company employment statistics on the included form. (See Bidding Requirements/Bid Proposal)
   e. Submit an agreement to notify the Hartford Commission on Human Relations as to all employment openings occurring with the company during the pendency of this contract unless otherwise expressly prohibited by collective bargaining agreement (such agreements must be so identified where they exist).
   These forms are available on-line at http://www.hartford.gov/purchasing/Documents.htm if not included in the Sample Form section.

3.25.3 The successful Bidder further agrees that the requirements as noted in paragraphs 3.25.2, a-e shall likewise apply to all on site construction sub-contractors.

3.25.4 Prior to contract award, the City of Hartford reserves the right to review a Bidders qualifications and ability to comply with the equal employment opportunity/affirmative action program requirements as contained in this bid document.

3.25.5 During the Performance of this contract, the contractor will agree to permit authorized City of Hartford staff to perform on-site project monitoring related to the contractual
equal employment opportunity/affirmative action performance requirements. The prime contractor, additionally agrees on behalf of his/her company and all subcontractors to submit the following reports during while performing under this contract:

a. Payroll Certification Form within 10 working days of end of reporting month.

b. Minority/Women Business Enterprise (M/WBE) Payment Status Reports (where applicable) upon request by the Commission on Human Relations.

c. Status reports as to special training and/or employment residency requirements (where applicable) upon prescribed forms.

3.25.6 The successful Bidder shall agree that neither he/she nor any subcontractors will discharge, expel or otherwise discriminate against any person because he/she has opposed any unfair employment practice or because he/she has filed a complaint or testified or assisted in any proceeding under Section 31-127 of the Connecticut State Statutes. The advertisement of employment opportunities shall be carried out in such manner as not to restrict such employment so as to discriminate against individuals because of their race, creed, color, age, sex, national origin, physical or mental handicap, religion, or sexual orientation except in the case of a bona fide occupational qualification or need.

3.26. EEO/AFFIRMATIVE ACTION REPORT

As a condition of doing business with the City the selected Bidder must be certified by the City as an Equal Employment Opportunity Employer. Certifications must be renewed annually. If your firm is not currently certified you may obtain the required forms on-line at: http://www.hartford.gov/purchasing/documents.htm and submit completed forms with your response.

Note that the EEO form contains the Hartford Affirmative Action Plan. The terms and conditions of the Plan are an integral part of the Standard Contract between the City and successful Bidder. A sample report form is included in the “Sample Forms” section of this document. To check the current status of your EEO certification contact the Office of Human Relations, 860.757.9785, fax 860.722.6486 or email: lmcruz@hartford.gov.


The successful Bidder shall be required to submit a "Monthly Employment Utilization Report," (the form is provided in this Request for Bid). Bidder agrees to the following goals:

- a minimum of 15% of the total project hours by trade shall be allocated to minority workers.
- a goal of 50% of the total project hours by trade allocated to minority workers.
- a Hartford resident employment goal of 30% by trade.

The EEO Report (available at: http://www.hartford.gov/purchasing/Documents.htm), together with the Monthly Employment Utilization report submitted by Contractor will be used to determine compliance with this Affirmative Action Plan. Contractor understands and agrees that its failure to achieve and maintain the minimum minority participation stated herein will be considered a breach of contract.

Specific instructions for completing this form are provided directly on the back of the form. The form shall be submitted to the Human Relations Director, Municipal Building, 550 Main Street, Hartford, CT 06103. Extra copies of the form or assistance in completing the form may be had by calling or visiting the office of the Human Relations Director. It is imperative that this form be submitted on time; failure to do so will be grounds for the City's withholding of all further payments until the forms are received.

END OF SECTION
Minimum Rates and Classifications  
for Heavy/Highway Construction  

**CLASSIFICATION**  

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>Hourly Rate</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>01) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters. <strong>See Laborers Group 7</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Boilermaker</td>
<td>$33.79</td>
<td>34% + 8.96</td>
</tr>
<tr>
<td>1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons</td>
<td>$32.18</td>
<td>19.79</td>
</tr>
<tr>
<td>2) Carpenters, Piledrivermen</td>
<td>$29.00</td>
<td>17.80</td>
</tr>
<tr>
<td>2a) Diver Tenders</td>
<td>$29.00</td>
<td>17.80</td>
</tr>
</tbody>
</table>

*As of:* Thursday, April 29, 2010
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Rate 1</th>
<th>Rate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3) Divers</td>
<td></td>
<td>$37.46</td>
<td>17.80</td>
</tr>
<tr>
<td>4) Painters:</td>
<td>(Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray</td>
<td>$39.20</td>
<td>14.55</td>
</tr>
<tr>
<td>4a) Painters:</td>
<td>Brush and Roller</td>
<td>$28.17</td>
<td>14.55</td>
</tr>
<tr>
<td>4b) Painters:</td>
<td>Spray Only</td>
<td>$31.17</td>
<td>14.55</td>
</tr>
<tr>
<td>4c) Painters:</td>
<td>Steel Only</td>
<td>$30.17</td>
<td>14.55</td>
</tr>
<tr>
<td>4d) Painters:</td>
<td>Blast and Spray</td>
<td>$31.17</td>
<td>14.55</td>
</tr>
<tr>
<td>4e) Painters:</td>
<td>Tanks, Tower and Swing</td>
<td>$30.17</td>
<td>14.55</td>
</tr>
<tr>
<td>5) Electrician:</td>
<td>(Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)</td>
<td>$35.40</td>
<td>19.51</td>
</tr>
</tbody>
</table>

*As of:* Thursday, April 29, 2010
### Project: Hyland Park Field Improvements

6) Ironworkers: (Ornamental, Reinforcing, Structural, and Precast Concrete Erection) $32.75 25.08 + a

7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9) $36.32 21.26

#### LABORERS####

8) Group 1: Laborer (Unskilled); Common or General $24.25 14.45

9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen, air tool operator $24.50 14.45

10) Group 3: Pipelayers (Installation of water, storm drainage or sewage lines outside of the building line with P6, P7 license)- Last updated 4/8/09 $24.75 14.45

11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block pavers and curb setters $24.75 14.45


**As of:** Thursday, April 29, 2010
Project: Hyland Park Field Improvements

13) Group 6: Blasters

<table>
<thead>
<tr>
<th>Rate</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>$26.00</td>
<td>14.45</td>
</tr>
</tbody>
</table>

Group 7: Asbestos Removal, non-mechanical systems (does not include leaded joint pipe) - Last updated 4/8/09

<table>
<thead>
<tr>
<th>Rate</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>$25.25</td>
<td>14.45</td>
</tr>
</tbody>
</table>

Group 8: Traffic control signalmen

<table>
<thead>
<tr>
<th>Rate</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>$16.00</td>
<td>14.45</td>
</tr>
</tbody>
</table>

-----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----- Last updated 4/5/09-----

13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders

<table>
<thead>
<tr>
<th>Rate</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>$28.58</td>
<td>14.45 + a</td>
</tr>
</tbody>
</table>

13b) Brakemen, Trackmen

<table>
<thead>
<tr>
<th>Rate</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>$27.75</td>
<td>14.45 + a</td>
</tr>
</tbody>
</table>

14) Concrete Workers, Form Movers, and Strippers

<table>
<thead>
<tr>
<th>Rate</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>$27.75</td>
<td>14.45 + a</td>
</tr>
</tbody>
</table>

15) Form Erectors

<table>
<thead>
<tr>
<th>Rate</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>$28.03</td>
<td>14.45 + a</td>
</tr>
</tbody>
</table>

As of: Thursday, April 29, 2010
### Project: Hyland Park Field Improvements

---ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:---Last updated 4/5/09---

<table>
<thead>
<tr>
<th>Position</th>
<th>Rate</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers</td>
<td>$27.75</td>
<td>14.45 + a</td>
</tr>
<tr>
<td>17) Laborers Topside, Cage Tenders, Bellman</td>
<td>$27.65</td>
<td>14.45 + a</td>
</tr>
<tr>
<td>18) Miners</td>
<td>$28.58</td>
<td>14.45 + a</td>
</tr>
</tbody>
</table>

---TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR:----Last updated 4/5/09----

<table>
<thead>
<tr>
<th>Position</th>
<th>Rate</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>18a) Blaster</td>
<td>$34.19</td>
<td>14.45 + a</td>
</tr>
<tr>
<td>19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders</td>
<td>$34.02</td>
<td>14.45 + a</td>
</tr>
<tr>
<td>20) Change House Attendants, Powder Watchmen, Top on Iron Bolts</td>
<td>$32.30</td>
<td>14.45 + a</td>
</tr>
</tbody>
</table>

*As of:* Thursday, April 29, 2010
## Project: Hyland Park Field Improvements

21) Mucking Machine Operator | $34.70 | 14.45 + a

---TRUCK DRIVERS---(*see note below)

<table>
<thead>
<tr>
<th>Two axle trucks</th>
<th>$26.98</th>
<th>13.48 + a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three axle trucks; two axle ready mix</td>
<td>$27.08</td>
<td>13.48 + a</td>
</tr>
<tr>
<td>Three axle ready mix</td>
<td>$27.13</td>
<td>13.48 + a</td>
</tr>
<tr>
<td>Four axle trucks, heavy duty trailer (up to 40 tons)</td>
<td>$27.18</td>
<td>13.48 + a</td>
</tr>
<tr>
<td>Four axle ready-mix</td>
<td>$27.23</td>
<td>13.48 + a</td>
</tr>
<tr>
<td>Heavy duty trailer (40 tons and over)</td>
<td>$27.43</td>
<td>13.48 + a</td>
</tr>
</tbody>
</table>

*As of:* Thursday, April 29, 2010
Project: Hyland Park Field Improvements

Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids) $27.23 13.48 + a

----POWER EQUIPMENT OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over. (Trade License Required) $34.05 17.75 + a

Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver ($3.00 premium when operator controls hammer). (Trade License Required) $33.73 17.75 + a

Group 3: Excavator; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required) $32.99 17.75 + a

Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper) $32.60 17.75 + a

Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell) $32.01 17.75 + a

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller. $32.01 17.75 + a

As of: Thursday, April 29, 2010
<table>
<thead>
<tr>
<th>Group</th>
<th>Equipment Details</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer)</td>
<td>$31.70 17.75 + a</td>
</tr>
<tr>
<td>7</td>
<td>Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24&quot; and Under Mandrel)</td>
<td>$31.36 17.75 + a</td>
</tr>
<tr>
<td>8</td>
<td>Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine</td>
<td>$30.96 17.75 + a</td>
</tr>
<tr>
<td>9</td>
<td>Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder)</td>
<td>$30.53 17.75 + a</td>
</tr>
<tr>
<td>10</td>
<td>Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.</td>
<td>$28.49 17.75 + a</td>
</tr>
<tr>
<td>11</td>
<td>Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment</td>
<td>$28.49 17.75 + a</td>
</tr>
<tr>
<td>12</td>
<td>Wellpoint Operator</td>
<td>$28.43 17.75 + a</td>
</tr>
<tr>
<td>13</td>
<td>Compressor Battery Operator</td>
<td>$27.85 17.75 + a</td>
</tr>
</tbody>
</table>

As of: Thursday, April 29, 2010
Project: Hyland Park Field Improvements

Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain) $26.71 17.75 + a

Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator $26.30 17.75 + a

Group 16: Maintenance Engineer/Oiler $25.65 17.75 + a

Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator. $29.96 17.75 + a

Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license). $27.54 17.75 + a

**NOTE: SEE BELOW

---LINE CONSTRUCTION----(Railroad Construction and Maintenance)----Last updated 4/17/09----

20) Lineman, Cable Splicer, Dynamite Man $35.65 10.70 + 6.25%

As of: Thursday, April 29, 2010
Project: Hyland Park Field Improvements

21) Heavy Equipment Operator $22.09 10.70 + 6.25%

22) Equipment Operator, Tractor Trailer Driver, Material Men $30.30 10.70 + 6.25%

23) Driver Groundmen $26.74 10.70 + 6.25%

----LINE CONSTRUCTION----Last updated 4/17/09----

24) Driver Groundmen $30.92 6.5% + 9.70

25) Groundmen $22.67 6.5% + 6.20

26) Heavy Equipment Operators $37.10 6.5% + 10.70

27) Linemen, Cable Splicers, Dynamite Men $41.22 6.5% + 12.20

As of: Thursday, April 29, 2010
Project:  Hyland Park Field Improvements

28) Material Men, Tractor Trailer Drivers, Equipment Operators  $35.04  6.5% + 10.45

As of:  Thursday, April 29, 2010
Project:  Hyland Park Field Improvements

Welders:  Rate for craft to which welding is incidental.
*Note:  Hazardous waste removal work receives additional $1.25 per hour for truck drivers.

**Note:  Hazardous waste premium $3.00 per hour over classified rate
- Crane with 150 ft. boom (including jib) - $1.50 extra
- Crane with 200 ft. boom (including jib) - $2.50 extra
- Crane with 250 ft. boom (including jib) - $5.00 extra
- Crane with 300 ft. boom (including jib) - $7.00 extra
- Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

---Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work---

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

As of:  Thursday, April 29, 2010
Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification. All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (iii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: Thursday, April 29, 2010
Sec. 31-53b. Construction safety and health course. New miner training program. Proof of completion required for mechanics, laborers and workers on public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (g) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2009, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting "person" for "employee" and adding "or program", amended Subsec. (c) by adding "or in accordance with Federal Mine
Safety and Health Administration Standards" and setting new deadline of January 1, 2009, deleted former Subsec. (d) re "public building", added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009.
Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION
SAFETY AND HEALTH COURSE
(applicable to public building contracts entered into on or after July 1, 2007, where the
total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in
Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing
wage statutes);

(2) The course is required for public building construction contracts (projects funded
in whole or in part by the state or any political subdivision of the state) entered
into on or after July 1, 2007;

(3) It is required of private employees (not state or municipal employees) and
apprentices who perform manual labor for a general contractor or subcontractor
on a public building project where the total cost of all work to be performed is at
least $100,000;

(4) The ten-hour construction course pertains to the ten-hour Outreach Course
conducted in accordance with federal OSHA Training Institute standards, and, for
telecommunications workers, a ten-hour training course conducted in accordance
with federal OSHA standard, 29 CFR 1910.268;

(5) The internet website for the federal OSHA Training Institute is
http://www.osha.gov/ilo/ote/training/edcenters/fact_sheet.html;

(6) The statutory language leaves it to the contractor and its employees to determine
who pays for the cost of the ten-hour Outreach Course;

(7) Within 30 days of receiving a contract award, a general contractor must furnish
proof to the Labor Commissioner that all employees and apprentices performing
manual labor on the project will have completed such a course;

(8) Proof of completion may be demonstrated through either: (a) the presentation of a
bona fide student course completion card issued by the federal OSHA Training
Institute; or (2) the presentation of documentation provided to an employee by a
trainer certified by the Institute pending the actual issuance of the completion
card;

(9) Any card with an issuance date more than 5 years prior to the commencement
date of the construction project shall not constitute proof of compliance;
(10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;

(11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and

(15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CT DOL website as soon as they are adopted in final form.

(16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwstnd/wgmenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTIMATELY ARISE CONCERNING THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.
November 29, 2006

Notice
To All Mason Contractors and Interested Parties
Regarding Construction Pursuant to Section 31-53 of the
Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

*Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.*

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.
Statute 31-55a

- Special Notice -

To All State and Political Subdivisions, Their Agents, and Contractors

Connecticut General Statute 31-55a - Annual adjustments to wage rates by contractors doing state work.

Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54 of the general statutes, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 of the general statutes shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

- The prevailing wage rates applicable to any contract or subcontract awarded on or after October 1, 2002 are subject to annual adjustments each July 1st for the duration of any project which was originally advertised for bids on or after October 1, 2002.
- Each contractor affected by the above requirement shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
- It is the contractor’s responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor’s Web Site. The annual adjustments will be posted on the Department of Labor Web page: www.ctdol.state.ct.us. For those without internet access, please contact the division listed below.
- The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project. All subsequent annual adjustments will be posted on our Web Site for contractor access.

Any questions should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109 at (860)263-6790.

← Workplace Laws

Published by the Connecticut Department of Labor, Project Management Office

NOTICE

TO ALL CONTRACTING AGENCIES

Please be advised that Connecticut General Statutes Section 31-53, requires the contracting agency to certify to the Department of Labor, the total dollar amount of work to be done in connection with such public works project, regardless of whether such project consists of one or more contracts.

Please find the attached "Contracting Agency Certification Form" to be completed and returned to the Department of Labor, Wage and Workplace Standards Division, Public Contract Compliance Unit.

Inquiries can be directed to (860)263-6543.
CONTRACTING AGENCY CERTIFICATION FORM

I, __________________________, acting in my official capacity as __________________________,
authorized representative ________________________ title ________________________

for __________________________, located at __________________________,
contracting agency address ________________________
do hereby certify that the total dollar amount of work to be done in connection with

________________________, located at __________________________
project name and number address ________________________

shall be $__________________, which includes all work, regardless of whether such project
consists of one or more contracts.

CONTRACTOR INFORMATION

Name: __________________________

Address: __________________________
Authorized Representative: __________________________
Approximate Starting Date: __________________________

Approximate Completion Date: __________________________

________________________ Signature __________________________ Date

Return To: Connecticut Department of Labor
Wage & Workplace Standards Division
Contract Compliance Unit
200 Folly Brook Blvd.
Wethersfield, CT 06109

Date Issued: __________________________
CONNECITICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM

I, ___________________________ of ___________________________
Officer, Owner, Authorized Rep. Company Name

[Blank Line]
do hereby certify that the ___________________________
Company Name

__________________________
Street

__________________________
City

[Blank Line]
and all of its subcontractors will pay all workers on the

__________________________
Project Name and Number

__________________________
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which
is attached hereto).

__________________________
Signed

[Blank Line]
Subscribed and sworn to before me this ________ day of _________________.

__________________________
Notary Public

[Blank Line]
Return to:
Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

[Blank Line]
Rate Schedule Issued (Date): ________________
Certified Payroll Form
WWS - CPI

You are here:  DOL Web Site ➤ Wage and Workplace Standards ➤ Certified Payroll Form WWS - CPI

In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.

Note: Once you have downloaded these forms and are ready to print them out, set the print function on your PC to the horizontal print orientation.

Note2: Please download both the Payroll Certification for Public Works Projects and the Certified Statement of Compliance for a complete package. The Certified Statement of Compliance appears on the same page as the Fringe Benefits Explanation page.

Announcement: The Certified Payroll Form WWS-CPI can now be completed online!

- Certified Payroll Form WWS-CPI (PDF, 727KB)
- Sample Completed Form (PDF, 101KB)

Published by the Connecticut Department of Labor, Project Management Office
Information Bulletin

Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53.

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification.

Below are additional clarifications of specific job duties performed for certain classifications:

Asbestos Insulator

- Handle, install, apply, fabricate, distribute, prepare, alter, repair, or dismantle heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

Carpenter

- Assembly and installation of modular furniture/furniture systems.
  [New] a. Free-standing furniture is not covered. This includes: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.
- Applies fire stopping materials on fire resistive joint systems only.
- Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings.
- Installation of curtain/window walls only where attached to wood or metal studs.

Cleaning Laborer

- The clean up of any construction debris and the general cleaning, including sweeping, wash down, mopping, wiping of the construction facility, washing, polishing, dusting, etc., prior to the issuance of a certificate of occupancy falls under the Labor classification.
Delivery Personnel (Revised)

- If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.
- An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer/tradesman and not a delivery personnel.

Electrician

- Installation or maintenance of telecommunication, LAN wiring or computer equipment.
- Low voltage wiring.

Fork Lift Operator

- Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.
- Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

Glaziers

- Installs light metal sash, head sills, and 2-story aluminum storefronts.
- Installation of aluminum window walls and curtain walls is the "laidwork of the Glaziers and Ironworkers classification which requires either a blended rate or equal composite workforce.

Ironworkers

- Handling, sorting, and installation of reinforcing steel (rebar).
- Installation of aluminum window walls and curtain walls is the "joint work" of the Glaziers and Ironworkers classification which requires either a blended rate or equal composite workforce. Insulated metal and insulated composite panels are still installed by the Ironworker.
- Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation.
Insulator

- Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings. Past practice using the applicable licensed trades, Plumber, Sheet Metal, Sprinkler Fitter, and Electrician, is not inconsistent with the Insulator classification and would be permitted.

Lead Paint Removal

- Painter Rate
  1. Removal of lead paint from bridges.
  2. Removal of lead paint as preparation of any surface to be repainted.
  3. Where removal is on a Demolition project prior to reconstruction.
- Laborer Rate
  1. Removal of lead paint from any surface NOT to be repainted.
  2. Where removal is on a TOTAL Demolition project only.

Roofers

- Preparation of surface, tear-off and/or removal of any type of roofing, and/or clean-up of any areas where a roof is to be relaid.

Sheet Metal Worker

- Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, wall panel siding, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Insulated metal and insulated composite panels are still installed by the Iron Worker. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers.
Truck Drivers

- Truck Drivers delivering asphalt are covered under prevailing wage while on the site and directly involved in the paving operation.
- Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
- Hauling material off site is not covered provided they are not dumping it at a location outlined above.
- Driving a truck on site and moving equipment or materials on site would be considered covered work, as it is part of the construction process.

☎ Any questions regarding the proper classification should be directed to the Contract Compliance Unit, Wage and Workplace Standards Division, Connecticut Department of Labor, 200 Folly Brook Blvd, Wethersfield, CT 06110 at (860) 263-6543.
Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES

Please Note: If the “Benefits” listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the “Benefits” section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers (including caulking), Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Bricklayer (Residential- Fairfield County)

a. Paid Holiday: If an employee works on Christmas Eve until noon he shall be paid for 8 hours.

Electricians
Fairfield County: West of the Five Mile River in Norwalk

a. $2.00 per hour not to exceed $14.00 per day.

Elevator Constructors: Mechanics


b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

**Power Equipment Operators**  
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year’s Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

**Ironworkers**

a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

**Laborers (Tunnel Construction)**

a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

**Roofers**

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

**Sprinkler Fitters**

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

**Truck Drivers**  
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.